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THE ARCHITECTURAL REVIEW VOLUME CXVI NUMBER 695 NOVEMBER 1954 FIVE SHILLINGS

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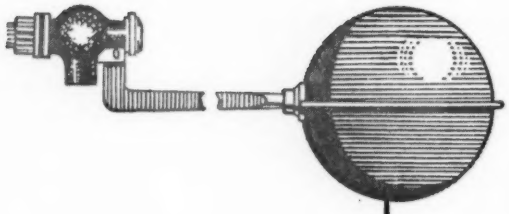

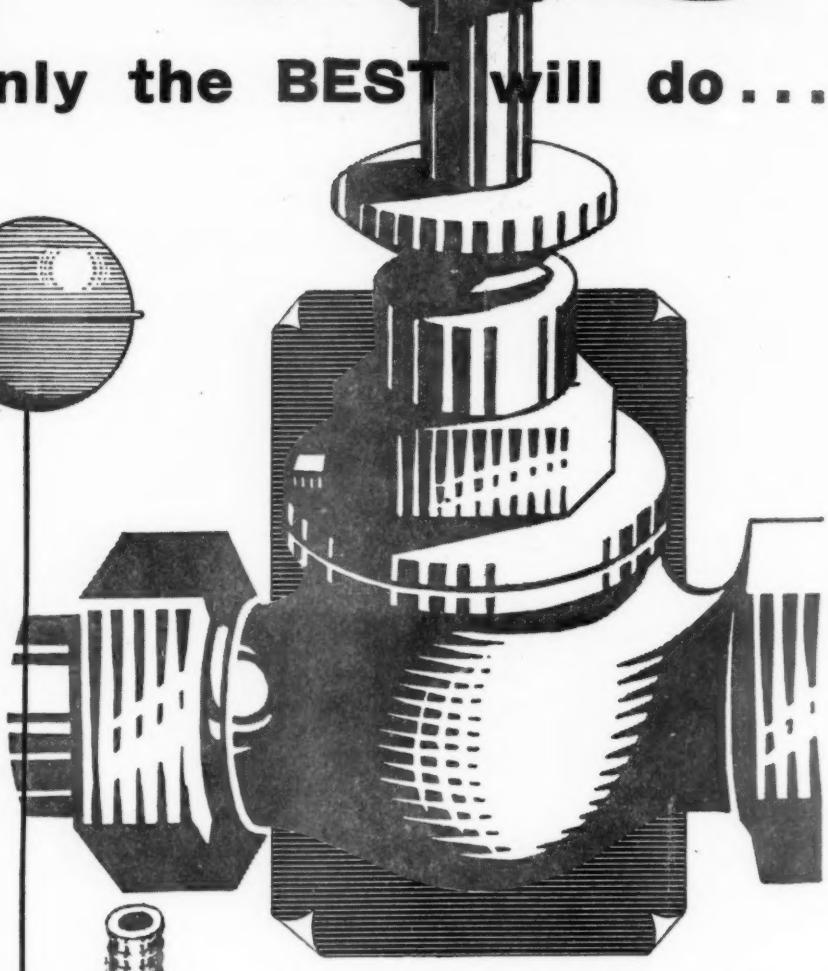

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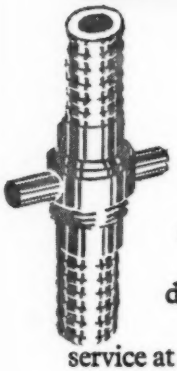

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MARGINALIA

Historic Buildings Preservation

Grants amounting to nearly £100,000 have been offered by the Minister of Works, on the recommendation of the Councils for England, Wales and Scotland, towards the cost of repairing the following 31 historic buildings in England, Scotland and Wales: Buckinghamshire, Denham Place; Cheshire, Adlington Hall and Dorfold Hall; Cumberland, Naworth Castle; Devon, Dunsland House; Durham, the Prebends' Bridge; Essex, Gosfield Hall, No. 1, Myddylton Place at Saffron Walden and St. Osyth's Priory; Hampshire, Avington Park; Kent, Mereworth Castle and Squerryes Court; Lincolnshire, Aubourn Hall; Northamptonshire, Althorp House and Gayton Manor; Oxfordshire, Chastleton House; Somerset, Taunton Castle; Wiltshire, Old Mill Hotel at Salisbury; Yorkshire, the Temple of the Four Winds, Castle Howard; West Ham, St. Peter's Vicarage; Aberdeenshire, Balbithan House, Kintore; Angus, Dudhope Castle, Dundee; Argyllshire, Dunollie House, Oban; East Lothian, Town House, Haddington; Midlothian, Mavisbank House, Polton; West Lothian, Newliston; Inverness, Abertarff House, Church Street; Morayshire, the Round Square, Gordonstoun; Perth, Pitheavlis Castle; Stirling, Houses on the approach to Stirling Castle; Monmouth, St. James's House. A general condition attached to these grants is that the public shall be given reasonable opportunities to see the buildings.

Subsequently, in a further list issued in October, 32 more grants totalling £65,000 were announced, including aid towards the reconstruction and repair of garden architecture and pavilions at Stoke Bruerne, Stowe School, Hagley Park and Croome Court; castles at Chirk, Craigievar, Kelburn, Hazlewood* and Thornbury; town houses in Pulteney Street and Royal Crescent, Bath, in York (Cumberland House), Cheltenham (Pittville pump-room), Chard (13, Fore Street), Nantwich (Churche's Mansion), Croydon (Wrencote); the rest of the grants going to work on Dame Elizabeth Fuller Free School, Watford, Holkham Hall, Marlow Place, Cranbury Park, Lydiard Tregoz, Stratford House, Birmingham, Grafton Manor, Bromsgrove, Birtsmoreton Court, Hutton John, Cumberland, Moor Park, Crickhowell and, in Scotland, to Newliston (a second grant), The Tolbooth, Kirkcudbright, Carnsalloch and Melville House, Fife. An innovation in this new group of awards is a grant for the repair of chattels—furniture and pictures—at Chastleton.

The Minister of Works has set up an Historic Buildings Bureau to keep the Historic Buildings Committee informed of historic houses for which a new use is required. Meanwhile, the three Historic Buildings Councils for England, Scotland and Wales have issued their first annual reports, which can be obtained from H.M. Stationery Office, price 6d.

The Historic Churches Preservation Trust has made the following grants, some of which are second allocations: £2,000 towards the restoration of St. Cuthbert's Church, Darlington; £2,000 towards the restoration of St. Oswald's Church, Durham; £500 for the preservation of the detached wooden belfry, Pembridge; £1,000 towards the elimination of the death-watch beetle in the church roof, Shepton Mallet.

*It has since been announced that negotiations concerning Hazlewood are not concluded.

Above: Mural painting by Stefan Knapp at Bentalls, Kingston. The artist's theme is an 'Image of Kingston' and its surroundings, with Bentalls store in the heart of the town. Department store patronage of this kind is surely an admirable thing, though the artist is greatly to be sympathized with in this instance for the setting of his mural, which does much to cancel out its qualities. Surely, in so ambitious a venture, it would have been worthwhile to modify the extreme insensitivity of the architectural detail.

Wisbech Exhibition

An exhibition of twenty-five paintings from the Penrose collection, either Surrealist or with some bearing on Surrealism, was held at Peckover House, Wisbech, for a week at the beginning of August. The conjunction needs some explanation, and it was only possible through the generosity of Mr. Penrose, who has a family connection with Peckover House, and the enterprise of the Wisbech Society, which arranged an exhibition which would be outside the imaginative range of most provincial art galleries. In addition, the National Trust lent Peckover House and the Arts Council gave their help—organizations dovetailing in a way that would have been impossible 20 years ago.

The result was worth all the trouble taken and made one of the best exhibitions of the year. The pictures were well hung, well lighted, and not crowded: the exhibition was the ideal size, and each painting was worth looking at. A list of them would sound like a short history of Surrealism: perhaps the finest was Picasso's famous 'Head of Max Uhde' and the most surprising 22 square feet of Chagall on the south wall—'To my Fiancée'—insistent in colour and rhythm, and a long way from either his miniature fantasies or his portraits.

Local reaction seems to have been mostly of the what-is-it variety: 'famous, but Oh! so puzzling for laymen' was the headline in the *Isle of Ely and Wisbech Advertiser*. But trying to make the title fit the Miro is as good a way as any of starting to look at modern art, and, once started, all the exhibits encouraged the transition from curiosity to appreciation. For each one was painted, as it was collected, *con amore;* there was not a lifeless nor a inflated picture there.

CORRESPONDENCE

City Re-building: 2*

SIR,—Your article in the issue of THE ARCHITECTURAL REVIEW is so flagrantly inaccurate in its reference to myself in so many particulars that I must ask you to correct the statements with an equal degree of publicity.

In the first place the control of heights of buildings to the south of St. Paul's was already in existence before Professor Holford and I were appointed.

I had previously been asked by the Goldsmiths' Company to make a suggestion for the lay-out of the St. Paul's precinct and later when I was approached by the City Authorities with regard to acting as planning consultant, I agreed subject to the joint appointment of Professor Holford with myself.

One of the first schemes brought forward for consideration was the extension northward to St. Paul's Churchyard of Faraday House.

I was not at any time consultant to the Ministry of Works, and had nothing whatever to do with the design for that building.

There was in existence a grid plan of heights prepared in 1935 by Mr. Godfrey Allen, the Surveyor of St. Paul's Cathedral, for any building that might be projected for any site to the south of St. Paul's down to the river. This plan was adopted in Mr. Forty's previous plan for the developments in the City that might come within the triangle of St. Paul's, the centre of London Bridge and the centre of Blackfriars Bridge. It was also adopted by us. I had nothing to do with the preparation of this grid plan and was only concerned in its application to schemes for development within this area. The diagrams numbers 16 and 17 contained in our report were intended to clarify the implications of the grid plan without any additional control whatever.

Sir Charles Mole produced the design for the Faraday House extension to St. Paul's Churchyard, and he readily agreed to a very slight modification for the height in order to comply with the height control of the grid.

As this was the first new building to be considered on the Churchyard frontage, it was not unnatural that it should be allowed to influence the design of other buildings around the Churchyard which also came within the area of the grid control.

I had in mind that Wren had prepared a plan for the whole Churchyard, and although conditions were now very different than in Wren's time there was a case for some approach to uniformity around the Churchyard—and after all it is *still the Churchyard*, and if there is still any chance of getting any architects to co-operate in a unified effort it would, in my opinion, be

well worth the effort. There would still remain considerable freedom for achieving variety in detail without sacrificing a certain degree of uniformity.

I have myself enjoyed a considerable degree of freedom in my own time, and I can sympathize with another architect's problems today, but there is always an opportunity for personal expression in one's work even when there may be what appear to be irksome controls.

The question therefore arises—Is St. Paul's worth the effort of self-control in the design of the buildings around St. Paul's Churchyard?—or is it not worth the effort?

Yours faithfully,

CHARLES HOLDEN.

[Mr. J. M. Richards, author of the article referred to, writes: *The facts given in Dr. Holden's letter do not seem to me to justify his description of my article as flagrantly inaccurate. His summary of the earlier efforts to control building heights round St. Paul's cathedral is interesting but does not contradict anything said in the article. I did not touch on this earlier history, as it was not relevant to the issues with which my article was concerned.*

The one specific fact that Dr. Holden corrects concerns his position in relation to the design of the façade of the Faraday House extension. I gave the architect as the Ministry of Works, and said that Dr. Holden was consultant. Dr. Holden explains that he was not the consultant, and that the design illustrated was produced solely by the Ministry. I apologize for the mistake, which was due to wrong information given to me. The fact remains, however, that Dr. Holden has been consulted about this design in his capacity of consultant architect to the Dean and Chapter of St. Paul's, and it is in pursuance of his policy of establishing uniformity of design in the buildings round the cathedral that this drawing has been circulated, in the way I described, to other architects concerned. It is also by his advice that the City Corporation is trying to impose a uniform scheme of design, as defined in the clause I quoted from the Holford-Holden plan, which follows, and amplifies, as Dr. Holden says, other agreements for architectural control in the locality. So although the Faraday House façade did not originate from Dr. Holden, it has his approval, and the part it plays in furthering his policy was correctly described.

My article was chiefly concerned with criticizing this policy. The greater part of Dr. Holden's letter is not a correction of the facts as I gave them but a reiteration of his belief that uniformity of design in the buildings round the cathedral is desirable. That is what I would strongly dispute, quite apart from any dislike I may have of the particular neo-Georgian idiom that Dr. Holden believes in. Control of the surroundings of the cathedral, in order to prevent outrages like the first part of Faraday House, is one thing, but to ring the cathedral round with a series of façades whose character is determined by set-backs, string courses and cornice-lines that have no relevance to contemporary structural methods and impose on them a feebly reminiscent architectural character, means putting the new buildings round the cathedral into a strait-jacket of a most undesirable kind. And apart from this question of architectural style there are strong arguments against imposing uniformity in any style. St. Paul's cathedral has always looked its best as the climax of one of those irregular and picturesque urban landscapes of which London traditionally consists, and to put it instead in a tidy setting of even height and identical character all round would detract from, not add to, its dignity.]

School at Hunstanton

To the Editors,

THE ARCHITECTURAL REVIEW

SIRS,—I should like you to know how glad I was that you illustrated the Smithson's school at Hunstanton in your September issue. After months of reading words, it comes as a refreshing change to read pictures of a building which is not merely an example, but a whole argument in itself. Come to think, you were probably quite glad to see it yourself.

This peculiar ruthlessness, this insistence on the building and nothing but the building, seems to me to be a very great achievement. It must have cost a lot of private indulgencies, as well as client's fancies, and will probably cost a few scraped elbows before it's finished, but surely is worth all that. Purity of style in this degree is badly needed in this country and we shall have a lot more healthy pieces of architecture if the Hunstanton precedent is followed. Clichés have been bedevilling designers and theorists. Clichés can be avoided altogether by adopting some such attitude as the Smithsons have here.

The only pity is that such a splendid building should be such an unfriendly one. Perhaps the photographs give a false impression, but from what I can see, I should hate to go to school there. All the rooms look hard and clattery, the stairs give a grim promise of canings and theoretical physics on the first floor. Even outside the place looks windswept and offers no shelter. Purity in the handling of materials is excellent, but puritanism in the choice of materials makes for brutality and is quite another matter. It would be wrong to confuse these two. Brutality is only one of the moods of architecture and purity of style is not limited to producing just this one mood but should run through the lot, from formality to sentiment.

Yours, etc.

PETER BERESFORD

To the Editors,

THE ARCHITECTURAL REVIEW

SIRS,—So 'the Thing' has finally been erected; and having celebrated its arrival with an overlarge slice of valuable AR space and the usual load of Smithson prose-bull,* is now to slip implacably into the history books. Not, if the historians have been blessed with the smallest iota of discernment, into the category of buildings whose spirit we must emulate, but into the class of those completely lacking in grace, charm and beauty.

How on earth people calling themselves architects could possibly be responsible for the piece of barely animated engineering illustrated in last month's edition is beyond comprehension. We have come by devious ways to expect a certain amount of aesthetic beauty from contemporary building . . . but there is none here. In fact Hunstanton School appears to be a sort of blind man's architecture.

Nobody would doubt that the workmanship and functional aspects are excellent; the brickwork looks quite fine, and the metal casements were probably delivered in exactly the right sizes for their frames; but is this quite enough?

Yours, etc.,

N. A. COWBURN.

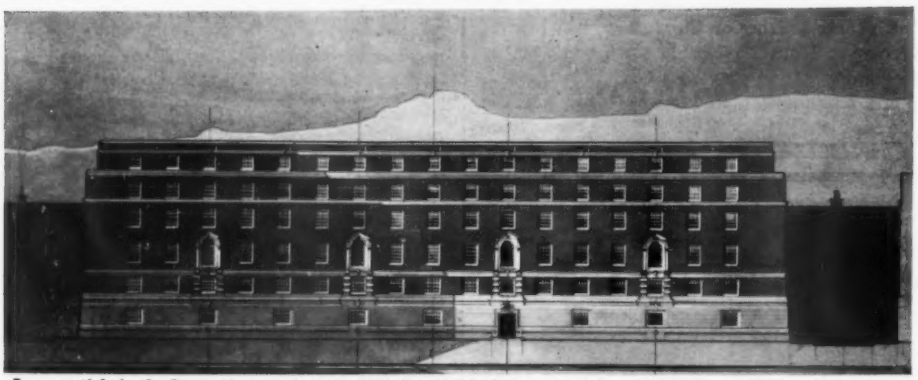
* In fact none of the prose describing and commenting on the school was by the Smithsons.—Ed.

Intelligence

Gardner Ertman of Edinburgh has been awarded a first prize ($2,500) in the European section of the Calvert House International Architectural Competition. The winner of the International award ($5,000) was Knud Harboe of Denmark. There were 1,600 contestants in the competition which was open to architects and students in Canada and Western Europe.

School at Hunstanton

In the September issue the drawings which appeared on pp. 154 and 156-8 were based on information compiled by Mr. Dargan Bullivant for Architectural Design and Construction.



In an article in the September number, to which Dr. Holden's letter on this page refers, a portion of the proposed facade of the Faraday House extension, south of St. Paul's, was reproduced, with a description of the way in which it was being circulated as a guide to other architects working in the area. Above is the whole facade, designed by the Ministry of Works in 1945. *The Ministry explains that it is subject to modification, since the requirements of the Post Office are constantly under review, but Dr. Holden states that although he was not responsible for it in the first place he approved of it and thinks it admirable as a model of the type of architecture to be encouraged round St. Paul's. The* REVIEW *reasons for disagreeing with him are given in the answer to his letter.*

ACKNOWLEDGMENTS

MARGINALIA, page 282; Faraday House, M.o.W., page 281: 'Image of Kingston,' Fox Photos. FRONTIS, Kenneth Browne. FLATS AT HAMMERSMITH, pages 290-292, Galwey, Arphot. HOUSE AT STORRINGTON, pages 293–294, Galwey, Arphot. COADE STONE, pages 295–301, 1, 16, 17, 19, 20, 21, B.R.S.; 2, 5, 6, 7, 8, 9, 16, 22, British Museum; 3, 4, 13, 14, 18, J. R. Teggin; 10, 11, F. J. Collins; 12, L.C.C. FACADE, pages 302–308, 1, N.B.R., 2, Jas. S. Hornbeck, 3, McCallum, Arphot, 4, Fello Atkinson, 5, 10, 11, 12, Galwey, Arphot, 6, Edilizia Moderna, 7, Arch. Year Book, 8, Colin Westwood, 8, Cartoni, 13, Wainwright. FLATS AT PADDINGTON, pages 309–318, Wainwright, T. G. Bell, Galwey, Arphot. MDINA, pages 319–322, 1, 10, Crown Copyright, 2, 3, 4, 5, 6, 7, 8, 9, Dimitri. CURRENT ARCHITECTURE, pages 323–326, Village School at Ford: C. H. Simmons; Cemetery Buildings at Cardiff: Galwey, Arphot; Shop in Canterbury: Entwistle. MISCELLANY, pages 327–333: Exhibitions: 1, 2, Leslie Collier & Partners. Landscape: Browne, Arphot. Lunettes: 1, 4, 5, 6, Benedikt Rast. SKILL, pages 335–348, Interior: John R. Pantlin. Design Review: Commercial Photo Co.; The Industry: 1, Art-Wood Photography, 2, Galwey, Arphot.

Architect: T. A. Collins, A.R.I.B.A. (Architect, Leicestershire County Council).

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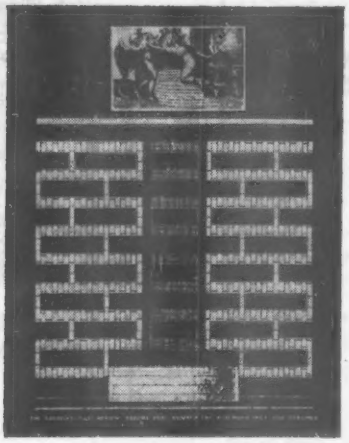

The cover shows an aspect of architecture and building technique coming full circle, or nearly so, in just over a century. It compares a group of figures cast in Coade stone with part of the access side of one of the large blocks at Hallfield Estate, Paddington. Both are concerned with the application of a synthetic material as part of a system of architectural disciplines—the figures cast in Coade's artificial stone as the required representational accent in a neo-classical composition, the panels of pre-cast concrete as part of an attempt to reduce to comprehensible form the inevitable disorder of a large inhabited apartment-block. Though the intervening century of Ruskinian and Neo-Ruskinian thought would have pronounced anathema on both, they are live issues at the moment, and an article on Coade Stone will be found on p. 295, while the Hallfield Estate is discussed and illustrated on pp. 302-318.

The Authors *S. B. Hamilton*, engineer at the Building Research Station. After service in the first world war, worked in Malaya and with the Ministry of Works. President of the Institution of Structural Engineers, October, 1954. His interest in Coade Stone followed discoveries made during preparation for Festival of Britain on the site of the Coade Manufactory. *Pearce Hubbard*, architect, partner in the firm of Harrison, Barnes & Hubbard. Born 1910; at the Liverpool School of Architecture, 1929-32; took up Rome Scholarship for a year and then practised in Palestine. Worked on a report on the replanning of Malta, 1943-6, and has since been occupied with school and hospital projects in the Mediterranean and Near East.

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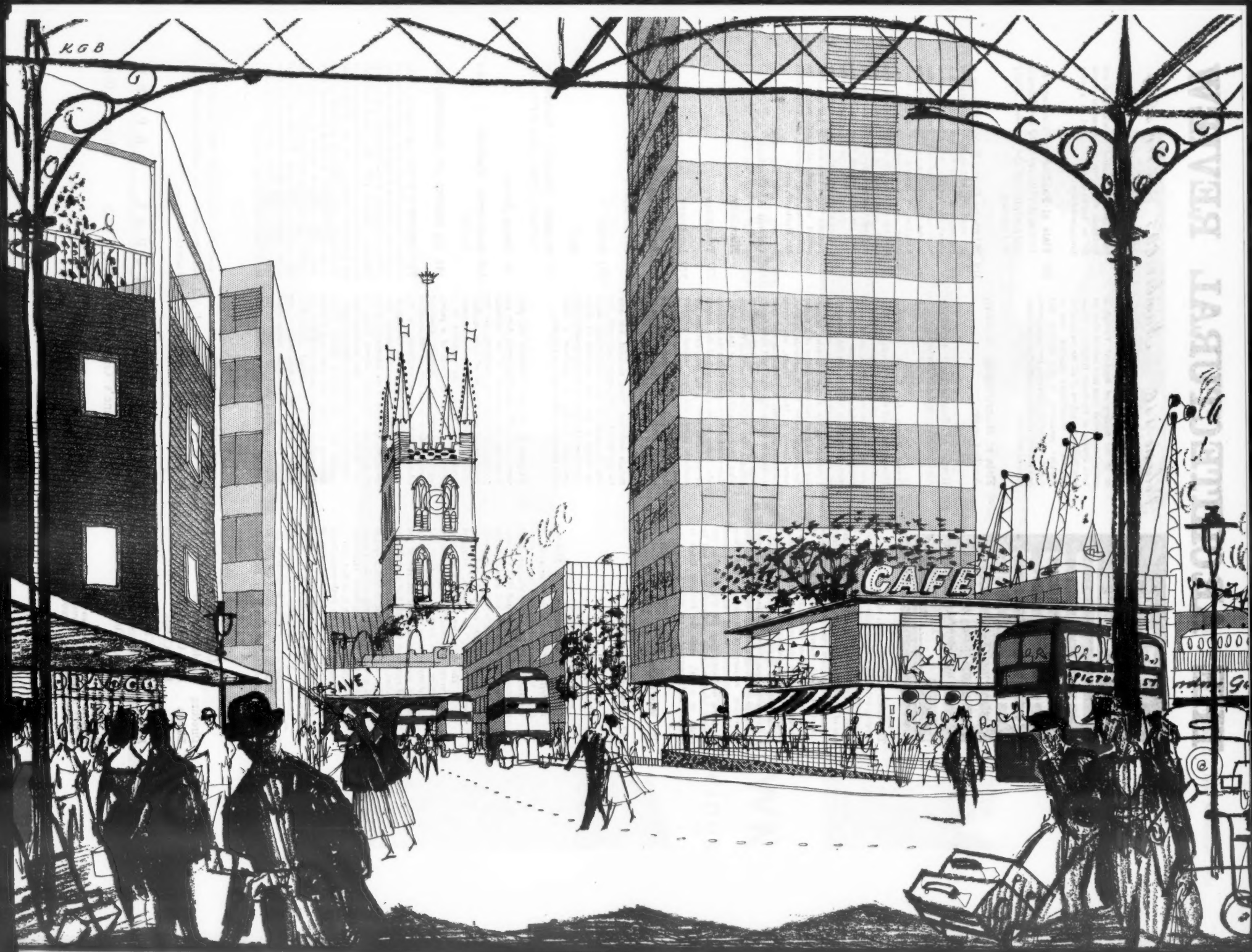
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CAFE

Further stages of the London Bridge Street development scheme (of which the first stage, Fielden House, was illustrated and described in THE ARCHITECTURAL REVIEW for September, 1954) will include the opening up and re-development of the island site in front of London Bridge Station. Kenneth Browne's impression of the completed scheme, opposite ☞, shows in general terms the ultimate intentions of the architect, John Lacey—looking from under the canopy of London Bridge Station toward Southwark Cathedral, one sees Fielden House on the left, and on the right, first the proposed restaurant, then a fifteen-storey office block and beyond it part of the lower block which, though it wraps round the other side of the site, nevertheless leaves much of the ground-space open for pedestrian circulation, and offers the station a more varied approach than the present funnel between undistinguished and unrelated buildings.

Henry-Russell Hitchcock

RUSKIN & BUTTERFIELD

Just at the moment when Early Victorian architecture, supported by returning prosperity, was rising to its greatest heights of achievement and originality at the beginning of the 50's, most of its presuppositions were already being questioned.* Two men, one a critic and the other an architect, a man who never designed or built anything of consequence and a man who never wrote a book or an article, took the lead in this questioning. Both John Ruskin and William Butterfield made their new positions clearly evident in the years 1849-51, before Pugin's death and while Paxton was building his Lily House and his Crystal Palace.

The High Victorian Gothic began with a church that was largely built, if not entirely completed internally, well before Early Victorian period showed many other signs of coming to an end. Intended to be the model church of the Ecclesiological Society, and executed over a rather considerable period of years with real prodigality, All Saints', Margaret Street, off Oxford Street in London, is one of the major works of Victorian architecture. The architect was forced to protest that he did not have carte blanche (as the press had reported); the treasurer of the building fund had to explain that the church was really not the benefaction of a single donor (as was also inaccurately reported) and that contributions were in fact sadly needed. But in the end All Saints' was completed and decorated with a sumptuousness unknown since St. Mary's, Wilton, a decade earlier, and rare in any decade of the 19th century.

The basic dates for the construction of All Saints'—cornerstone laid November 9, 1850; consecration May 28, 1859—are more than a little confusing. The church was

* This article is condensed from the final chapter of Professor Hitchcock's new book *Early Victorian Architecture in Britain*, shortly to be published by the Architectural Press; 2 vols. £7 7s. 0d.

actually completely designed by Butterfield and even contracted for in 1849. In its April, 1850, number the *Ecclesiologist* announced that 'the founders and architects are anxious to make it a practical example of what we are very anxious to see tested, viz., constructional polychrome'. The article then went on to describe the character of the red and black brick patterning planned for the exterior and the more elaborate geometrical mosaic of marble and tile that would ornament the interior. Moreover, All Saints' was so far completed structurally in the normal two years (i.e., by late 1852, when only the murals, the stained glass, and the furniture were lacking) that the *Builder* published in its number for January 22, 1853, a view of it as an effectively finished building; two years later, in March, 1855, a similar view appeared in the *Illustrated London News*.

Long before 1855 many whose interest was aroused by reports of the novelty of All Saints' must have visited the site when they came to London; for it was well advertised by the Camdenians as a model of their architectural aspirations and most conveniently located in the heart of the West End where visitors could readily find it. Once the walls had risen even a few feet above the ground, the startling character of Butterfield's structural polychrome had certainly become evident even to casual passers-by. The steeple, moreover, rising higher than any other structure in the London of its day and as striking for its stark silhouette as for its boldly banded walls and spire, soon provided a prominent landmark to draw the curious to Margaret Street. It is natural that Butterfield, operating here under a blaze of publicity quite alien to his own seclusive nature, should have been generally credited with the initiation here, at one stroke, of the High Victorian Gothic. The circumstances are such that this assumption can hardly be essentially untrue; yet to arrive at a more rounded truth one must consider—and I believe must dialectically combine with such an assumption—the opposed thesis that Ruskin is the only begetter of the High Victorian Gothic in general and more specifically of structural polychrome.

In 1848 Ruskin, the 29-year-old author of *Modern Painters* (5 vols., 1843–60) of which the first three volumes had already appeared, was spending the first winter of his *mariage blanc*, not in carrying further his interminable treatise on painting, but in writing and illustrating a new work on architecture. *The Seven Lamps of Architecture* was written rapidly between November and April and appeared early in May, 1849. It was then very widely noticed both in literary and in professional journals, although more favourably in the former than in the latter. The simple matter of chronology makes it impossible for Butterfield to have been influenced in the design of All Saints' by Ruskin's *Stones of Venice*, for the first volume of that work did not appear until 1851 by which time his major design decisions must all have been made. The question therefore is: Does All Saints' show internal evidence of familiarity with the text of the *Seven Lamps*? No direct evidence of Butterfield's reading of the book is available; but the long and on the whole enthusiastic review in the *Ecclesiologist* although belated—it did not appear until October, 1849—gives ample evidence in its nine pages that the book was carefully read and pondered in the circle of Butterfield's closest associates.

The reviewer early states the *Ecclesiologist*'s official approval of the basic doctrines in Ruskin's 'Lamp of Truth' even though he expresses less antipathy to the use of iron in construction than Ruskin. Ruskin's defence of the propriety of using marble plaques over brick walls, a crucial point theoretically, is also accepted although his argument in fact includes patent sophistries. In discussing Ruskin's 'Lamp of Power' the reviewer commends those passages favouring 'mighty masses' and scorning walls cut up by buttresses as any friend of Butterfield's naturally would. The review also notes that Ruskin, under the rubric of the 'Lamp of Beauty,' finds colour '*essential*' in architecture but that he deprecates its use, except with extreme discretion, in sculpture. 'Instructive and eloquent' are the words chosen to characterize the book's theories on the use of colour, even though Ruskin's analogies with Nature's use of colour in shells and insects are found hard to follow and his dictum that colour-mosaic is the only feasible modern ornament is considered too exclusive.

Ruskin's high praise of Giotto's Florentine campanile is remarked as surprising, as is also

the fact that a new work entirely devoted to Italian Gothic, *The Stones of Venice*, was already announced as in preparation. Agreeing warmly with Ruskin's attack on the rising clamour of the day for a new style, the reviewer approves the four old styles Ruskin suggested for universal acceptance. (These are, of course, the Pisan Romanesque, the Florentine Gothic, the Venetian Gothic, and the earliest stage of English Decorated.) Ruskin's remark that the Decorated is 'the most natural, perhaps the safest choice' is naturally underlined since it represents the long-established Camdenian position.

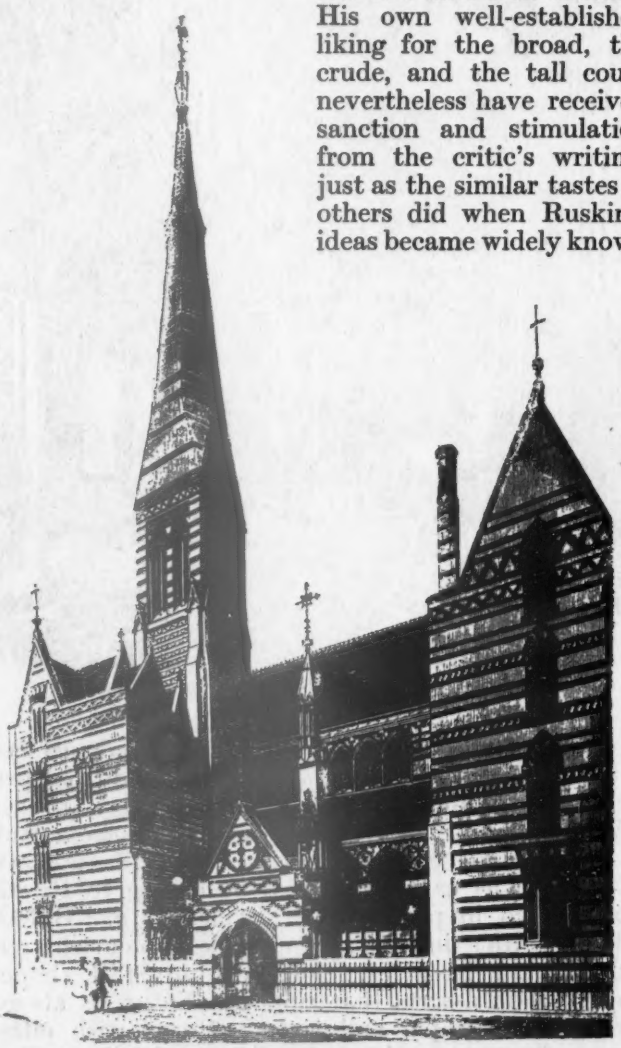
Finally the reviewer in the *Ecclesiologist* states correctly that the book should not be considered an architect's vade mecum in practice; its aim was rather to discover basic principles and to commend them to all men's attention. Ruskin's statement that no art can be truly Christian without the guiding principles of self-sacrifice, truth, and obedience echoed the Society's own doctrines. For all the 'regrettable violence' of Ruskin's attitude towards the 'Unreformed Church' and his protests against the 'restoration' of medieval monuments—an activity at which the Society was one of the most aggressive sinners—it is no wonder that the reviewer, speaking for the Society, states that its members 'regard his volume with feelings of gratitude and admiration.' Of course there is no certainty that the review reflected Butterfield's opinions nor did it very specifically underline those aspects of the doctrine of the *Seven Lamps* which have usually been considered most immediately influential. Only the internal evidence provided by examination of the architect's church and the critic's text can, in the absence of information about what Butterfield was reading at this time, establish a probable relationship between them.

There is very little about All Saints', particularly as regards the exterior, which should be considered specifically Italianate, a point that was early noted by the perspicacious G. E. Street. Despite the boldness of the massing and the general avoidance of buttresses, the handling of form here could hardly have been derived from the recommendations given in the *Seven Lamps*. In so far as the formal elements are not conventionally fourteenth-century English—the tracery, for example—they are purely Butterfieldian, 1.

Although there is a strong suggestion of foreign influence in a few features, notably in the handling of the steeple, that influence seems North German rather than Italian. The suggestion tentatively broached by John Summerson (in an important article in the *Architectural Review*, *98*, 166-175, reprinted in his *Heavenly Mansions* [1950]) that Butterfield had already studied the monuments of Siena at first hand is hardly borne out by internal evidence; it rests in any event on the most indirect sort of hearsay. But many English architects and ecclesiologists in these years were visiting and reporting on the brick Gothic of North Germany; if Butterfield had not seen German churches himself he had probably at least heard of their chief characteristics. Even so, the wooden spire is not necessarily un-English except in its bold scale and extreme simplicity; and those are of course characteristic qualities which Butterfield imposed on almost every major feature he borrowed.

The combination of black and red brick in the walling is certainly un-Italian but not necessarily un-English; banding in brick of these two colours has, however, closer German prototypes. The stone bands in the tower and on the west front are more Italianate and hence more 'Ruskinian' in a loose sense. But it is the way the black patterns are disposed, almost regardless of the architectural forms that cut across them and as gratuitously irregular in their spacing as they are coarse in scale, that seems to follow most closely what Ruskin was then recommending. For instance, under the 'Lamp of Sacrifice' Ruskin remarks, 'chequered patterns, and in general such ornaments as common workmen can execute, may extend over the whole building . . .' Carved work, on the other hand, such as bas reliefs and capitals, should in his estimation be restricted to eye level. This certainly applies to the Annunciation relief Butterfield placed low on his lone south buttress. It also applies to the carved work inside the church which is mostly on the capitals of the nave arcade.

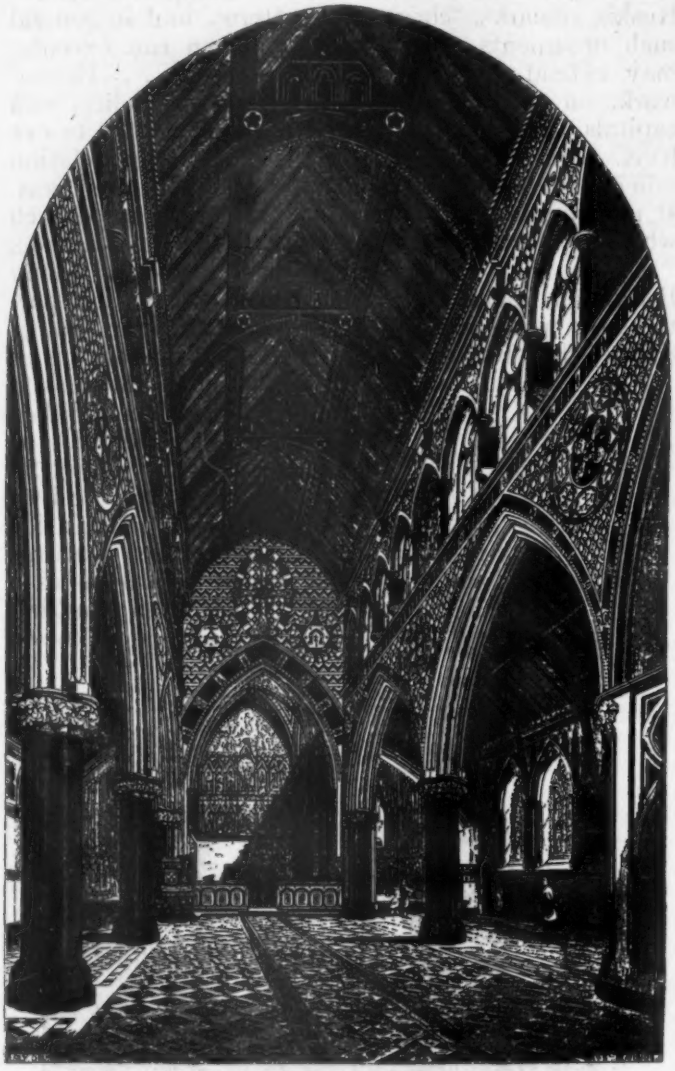
Under the 'Lamp of Power' there are many Ruskinian dicta that All Saints' illustrates particularly well—which does not necessarily mean, of course, that Butterfield had to learn composition at this late date from Ruskin. His own well-established liking for the broad, the crude, and the tall could nevertheless have received sanction and stimulation from the critic's writing, just as the similar tastes of others did when Ruskin's ideas became widely known



1, *a contemporary engraving of All Saints', Margaret Street.*

a few years later. Under the 'Lamp of Beauty' also the Ruskinian requirement that one member shall always dominate the whole edifice justifies, but certainly does not explain, the tremendous steeple Butterfield raised over All Saints'.

It is in what Ruskin says further about colour under the 'Lamp of Beauty' that one can find the closest relationship to Butterfield's characteristic way of designing walls both here and in his later work. A building, Ruskin says, should be coloured (with natural materials) as Nature colours one thing, say a shell or a flower or an animal. Colour should therefore



2, the interior of All Saints', Margaret Street, from a print of 1850.

be independent of form and placed on broad surfaces, not on focal points of plastic interest. All of that prescription certainly applies very precisely to the colour work on the inside, 2, as well as on the outside of All Saints'. Graceful carved work of elaborate form, such as capitals, should according to Ruskin be executed in plain white marble—as are Butterfield's capitals in the nave arcade. Coloured areas should have irregular, blotched, imperfect shapes, since Ruskin asserts that colour in Nature is always arranged in simple and rude patterns with either very soft or very simple outlines. Of soft outlines there are none, inside or out, at All Saints'; but all the rest of this Ruskinian doctrine about colour is so perfectly illustrated that Butterfield must have been following it—or so at least it seems in the absence of any negative evidence such as formal disclaimers of Ruskinian influence by him or his close associates.

'Blotches,' 'zones as in the zebra,' 'chequers and zig-zags,' 'triangles, squares and circles,' the very words of condemnation that generations have used to criticize the colour work of Butterfield and his imitators, appear as Ruskin's specific recommendations in the 'Lamp of Beauty.' The critic indeed asserts that it is impossible to be 'overquaint' or 'over-angular' in the arrangement of the elements of architectural colouring; even Tudor panelling could be acceptable if executed in flat colour—and here and there on the aisle walls Butterfield seems to follow this heretical suggestion. All Saints' bears no over-all resemblance to the Doge's Palace, to Ruskin 'the purest and most chaste model he can name'; nor yet to his favourite S. Michele of Lucca, such as is frequently seen in later Victorian commercial architecture. Yet the lack of co-ordination at All Saints' between window arrangements and surface patterns exceeds that to be seen on the Venetian palace which was Ruskin's chief exemplar of over-all polychrome wall treatment; and Ruskin's recommendation of the use of simple, highly abstracted forms in colour inlay, as on the façade of the Lucca church, is closely followed inside and out. 'Sharpness and piquancy,' which Ruskin so much admired in the constructional coloration of the Pisan school, are exactly the qualities that best characterize Butterfield's polychromy.

Under the 'Lamp of Life' Ruskin offers a vigorous recommendation of irregularity in architecture, writing specifically in praise of what he calls the 'bold "sketchy" work of the master.' This phrase seems peculiarly to sanction that rather makeshift and awkward juxtaposition of parts to which Butterfield was already much addicted. When Ruskin expressed the wish that modern English architects had a little of the 'impudence' of the Pisan builders he picked one of the words later critics have most often been tempted to use in describing Butterfield's approach to design. When he notes with approval that there is 'sensation in every inch' of the Pisa monuments Ruskin seems even more precisely to be preconizing Butterfield's mature style. The 'fearlessness' of living architecture, which he likens to that of Nature, the 'courage' that shows itself in avoidance of logical consistency in detail, the bold use of 'noncorrespondent' features, and the 'quaint and uncouth forms' for which he expresses particular admiration in all the architecture of the Middle Ages —these are all familiar qualities of Butterfield's best building. 'Freehand work' expresses Butterfield's basic method of design; while 'variety in execution, some careful, some careless,' seems exactly to define the results he rather perversely achieved by close supervision of his buildings in construction. Finally, when Ruskin came under this Lamp to conclude that 'the only manner of rich ornament left to us is the geometrical colour mosaic and that much might result from our strenuously taking up this mode of

design,' he may even have provided the particular call that Butterfield and his sponsors were heeding in making All Saints' so polychromatic.

If posterity still finds All Saints' rather harsh and raw after a century, one may note—as perhaps Butterfield noted in the 'Lamp of Memory'—that no building, according to Ruskin, reaches its prime till four or five centuries have gone by. Monumental architecture, Ruskin held, should therefore be designed chiefly with reference to its appearance after a half-millennium. At All Saints' three or four centuries more should mercifully reduce the frescoes (if not the murals in glazed tile) to invisibility and possibly destroy the stained glass which the blitz spared. Ruskin's recommendation that Italian Gothic should be practised only in hard materials such as granite, serpentine, and crystalline marbles certainly applies to the materials Butterfield used in his interior; while his external finish *looks* hard and permanent enough to have satisfied the Egyptians.

Finally, if we consider the main stylistic prescription of the seventh Lamp, the 'Lamp of Obedience,' it is evident that Butterfield accepted the discipline of the early English Decorated, one of the four styles Ruskin proposed for universal acceptance in nineteenth-century England. Just as Ruskin demanded Butterfield achieved his considerable originality at All Saints' within an already established frame of style (at least as that ambiguous word was understood in mid-nineteenth-century England, meaning a codified system of architectural forms derived from the work of some past age). 'True freedom,' Ruskin said, 'comes from restraint under accepted rules'; it was such freedom that Butterfield sought and found. Just as Ruskin insisted would be the case, the stylistic libertarians in this decade and the next, those who attempted consciously to create wholly new and original nineteenth-century styles, were more shackled by the limitations of their own time.

Such considerations as the above do not really answer the question as to Ruskin's actual influence on Butterfield at All Saints'; nor can it be answered finally without discovering a direct avowal in the architect's own words (or equivalent evidence provided by close associates) of his debt to Ruskin. Those who award to Butterfield the chief credit for the initiation of the High Victorian Gothic must otherwise be more nearly right. The influence of All Saints' was immediate, unmistakable in its effect, and generally recognized by contemporaries; but the reputation, and hence the influence, of Ruskin became widespread only with the publication of the three volumes of *The Stones of Venice* (Vol. 1, 1851; Vols. 2, 3, 1853) and the appearance in book form of his more succinct *Lectures on Architecture and Painting Delivered at Edinburgh* a year later. Direct Ruskinian influence had to be reinforced, moreover, at least in its Italianizing direction, by that of G. E. Street's *Brick and Marble Architecture of the Middle Ages* (1855) before it became very noticeable in contemporary architecture. In 1855 a second edition of the *Seven Lamps* became necessary to satisfy the appetite of the growing body of Ruskin's disciples and his direct association with a major building project, the Oxford University Museum, began. Emulation of Butterfield's All Saints' can be clearly recognized as it spread through the work of the profession in the years immediately following 1850; Ruskin's doctrines, on the other hand, were for the most part being discussed rather than followed in those years and still seemed to most architects impractical and highfalutin, as indeed they often were. Only after 1855 did a more peculiarly Ruskinian and Italianizing current, easy to differentiate from the earlier stream flowing from the Butterfieldian spring in Margaret Street, become significant.

Undoubtedly a close spiritual kinship existed between Ruskin's critical 'crankiness' and the more creative 'crankiness' of Butterfield, but there were vital differences too. On the whole Ruskin was a pessimist, fundamentally unwilling to believe that any new architecture could be really good in the way of the old architecture of the Middle Ages. Butterfield, on the other hand, was an optimist, always full of the ambition to create for his own day. As his restorations so terrifyingly indicate, he felt quite capable of improving on the work of medieval builders. It was Butterfield's optimistic spirit and not Ruskin's defeatism that would colour the High Victorian period and its characteristic architecture, at least in the 50's and early 60's. The more important and subtle effects of Ruskin's writing on architecture came only somewhat later.

In the years just before 1860 sensitive younger men like William Morris and Philip Webb began, after careful study of his writings, to reject the very things—structural polychrome, for example, and medieval Italian forms—which are supposed to illustrate most definitely the impact of Ruskin's ideas on Victorian building. Ruskin was once more totally disgusted with nineteenth-century architecture by this time, as he had been when he began to write the *Seven Lamps* a decade earlier. After the completion of the University Museum at Oxford in 1859 he withdrew rather self-righteously from all contact with contemporary production; but his influence then widened and began to flow through many divergent channels. Unlike Butterfield's, the later influence of Ruskin, or at least important aspects of it, has lasted down into our day.

But already by 1852 a whole group of architects, both young and old, were beginning to design buildings, all Gothic but by no means all churches, that clearly indicated a new phase of Victorian architecture was actually under way. With the appearance of the *Stones of Venice, 1*, in 1851 Ruskinism had become available as a system, while from All Saints' and St. Matthias's, Stoke Newington, something like a Butterfieldian system could also be deduced. Both systems were accessible to all who were interested; it was therefore quite natural that the two should be merged in general practice.

FLATS AT HAMMERSMITH

1, the terrace, from the back: the private balconies have side panels painted khaki and black. 2 the front, with access balcony and the stairs on the left.

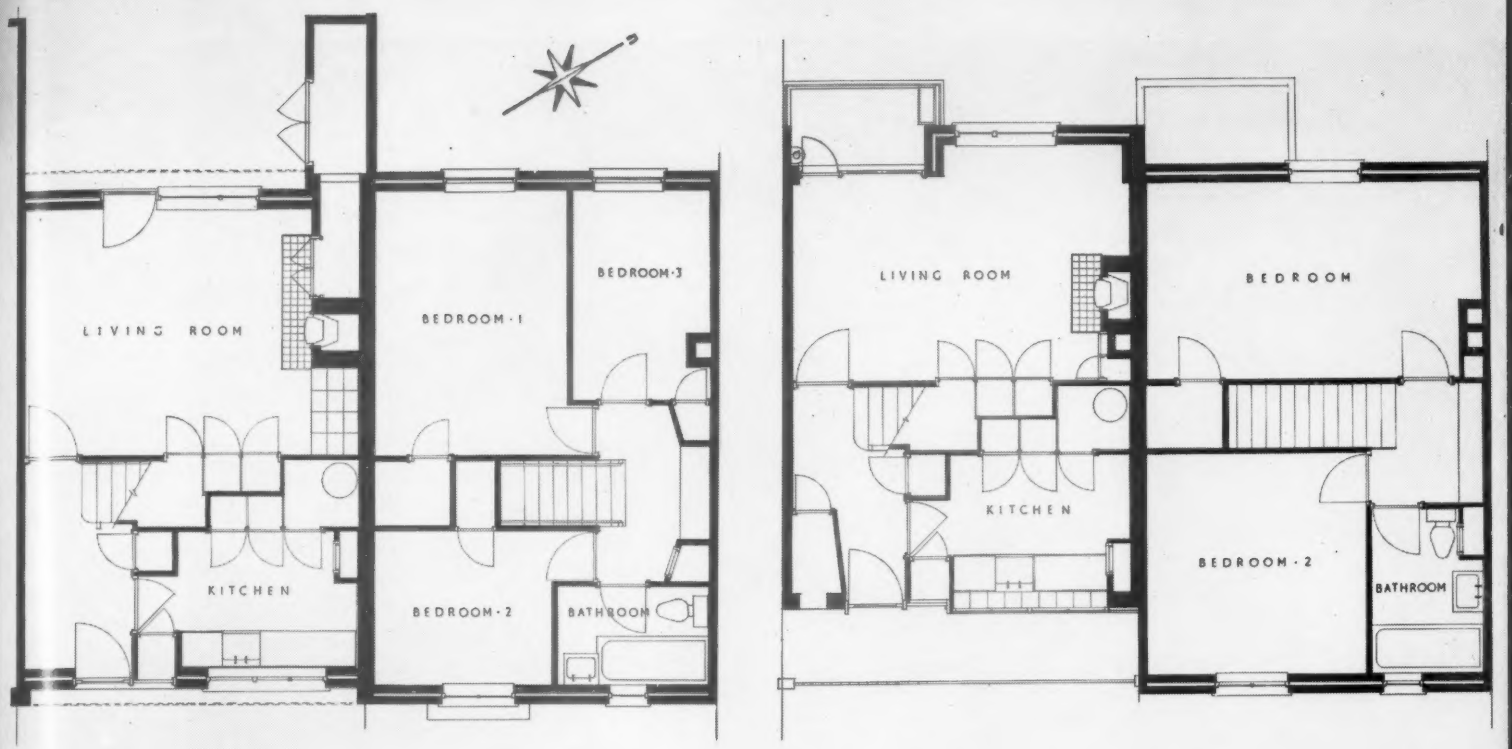
ARCHITECT | **NEVILLE CONDER**
ASSISTANT ARCHITECT | **DENNIS BERRY**

This four-storey terrace is gap-filling in North Hammersmith, in similar circumstances to the block published on page 186 of the August ARCHITECTURAL REVIEW. The site—Melrose Terrace—is south of Shepherds Bush, between the road to Hammersmith Broadway and the railway, and before bomb damage had been part of a bulgy, bow-fronted, late-Victorian terrace. The new terrace is planned as superimposed two-storey maisonettes, to use an ugly word to describe a neat arrangement: 2-6 below, 2a-6a on the second floor, reached by a balcony and the staircase at the south end of the block. Each maisonette will house four people: in the upper set there are two double bedrooms, and below where there is no access balcony the extra space available has allowed a different staircase arrangement and two single bedrooms instead of a second double room.

The construction is load-bearing brickwork, with ground floor, second floor and roof of concrete, and the intermediate floors of timber. The loads of front and back walls are transferred by r.c. beams at each storey height to the cross walls, which alone are taken down to foundation level. These are 9 in. Fletton brickwork, edged with engineering bricks which are bonded through the external cavity walls to provide a tie and to define the frontages of the separate maisonettes. The internal skins of façade walls and all partitions are breeze blocks.

The facing bricks are London stocks, with engineering bricks as described above and also on the ground floor of each cross wall. The doors, window frames and balcony details form careful compositions in very dark green, black and white; the panels above the light fittings on the balcony are light blue. Inside, concrete floors are finished in grey or buff thermo-plastic tiles.

1



ground floor plan | first floor plan | second floor plan | third floor plan | scale: 1/8 in. = 1 ft.

2

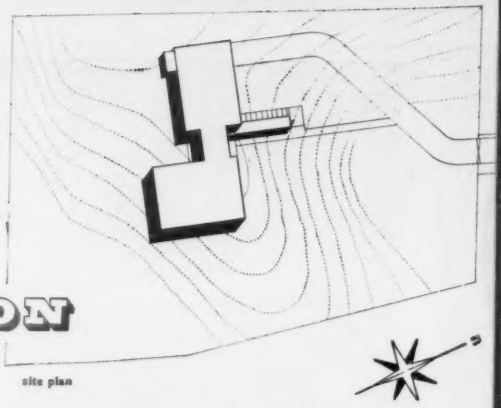
3

FLATS AT HAMMERSMITH

3, close view of the back of the terrace, showing the engineering bricks bonded through the cavity wall. 4, the stairwell. 5, detail of the porch; the label is black and white on red with a white surround set in a khaki panel; all other detailing is black and white.

4

5



site plan

HOUSE AT STORRINGTON

ARCHITECTS | **RICHARD SHEPPARD AND PARTNERS**

1, the entrance hall from the south, with storage space on the right.

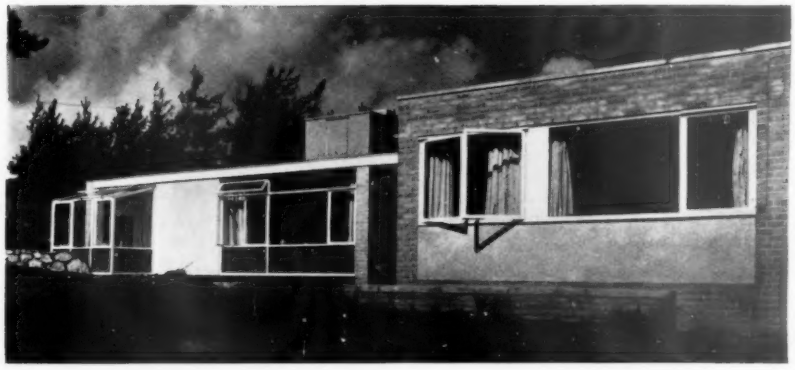
The house faces the Sussex Downs on a steeply sloping half-acre site in thick woodland which is being developed with detached houses retaining the original trees. The view to the south is superb and the house has been planned around it: all the main rooms face south and there is an outdoor living-terrace and sleeping-porch on that side. Living area and bedrooms are in separate blocks connected by the entrance hall; as the client is a keen gardener a heated greenhouse has been built on to the south wall of the living room and is accessible from inside it. The roof can be reached by a metal ladder on the west wall of the house and will eventually be used for sunbathing. Access is from the north and the brick wall on this side conceals the stores and provides a background to climbing plants. Water has to be pumped to a 200-gallon storage tank on the roof which has a clapboard housing painted olive green.

The construction is load-bearing brickwork; the roof is 2 in. wood-wool slabs and three-ply felt with spar finish on timber joists. The outside finish is light-brown facing bricks, with rendered panels under the windows. The internal walls are plastered and painted, all doors are painted lemon yellow and all the built-in furniture was designed by the architects.

2

2, the bedroom wing with sleeping porch inset. The panel under the living-room window, left, is glass faced, and the wall behind rendered olive green. 3, the south front with greenhouse and living-room window on the left and main bedroom window on the right. The panel below the bedroom window and the wall between the greenhouse and living-room windows both have white rendering. 4, looking south through the hall. The roof beams are painted white with aluminium flashing above.

HOUSE AT STORRINGTON



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4

plan scale: 1 16 in. = 1 ft.

COADE STONE

S. B. Hamilton

The engraving above—the frontispiece of the 1799 catalogue of the exhibition of products of the Coade Manufactory—represents a group cast in Coade's patent stone for the Pelican Office in Lombard Street. Now moved to the Geffrye Museum, this period piece still exists to pay tribute to the durability of a product which visibly affected the appearance of Regency London, and whose history is described below.

Nearly half a century before the Coade business was founded a factory was opened, on or near the site they came to occupy, by Richard Holt who held a patent for, and claimed to be in possession of, valuable technical secrets relating to the manufacture of artificial stone. His patent No. 447 of 1722 was held jointly in his name and in that of Thomas Ripley, the architect who designed the Admiralty Building (erected between 1724 and 1726). In the same year, Holt took out a second patent (No. 448) jointly with Samuel London for 'a certain new composition or mixture (without any sort of clay) for making of white ware' and 'Earthenware of more exquisite shape than the present method of turning could ever perform.' No details were divulged in either patent and it is difficult to imagine what protection such vaguely drawn claims could have given had they been challenged in the courts.

Holt's first patent was granted to protect the invention of 'a certain compound liquid metal . . . by which artificial stone and marble is made by casting or running the metal into moulds of any form or figure . . . and which being petrified or vitrified and finished by strong fire becomes more durable and harder than stone and marble.' The word 'metal' was here used to mean any hard mineral substance in the same sense as we still use it when we speak of 'road metal.' The word 'stone' at that period was also used, as 'stein' still is in German, to connote any hard inorganic material, whether won in the natural form by quarrying, prepared from softer material by burning, or from loose material artificially aggregated by a cold process as in concrete. These terms only acquired precise limits when the modern sciences of chemistry and mineralogy were formulated in the nineteenth century.

In order to interest architects, and particularly Lord Burlington, in his invention, Holt published, in 1730, *A Short Treatise of Artificial Stone.* In this work he commented on the weakness of such natural stones as Bath and Portland, declared that the ancients had used a cement for binding clay into an artificial stone by a process of which the secret had died with them, but that by experiment he had discovered something equivalent to the lost art of the ancients. He believed the pyramids of Egypt and the monoliths of Stonehenge, for instance, were of artificial stone made on the spot (presumably by a cold process). His own ingredients were to be had in several parts of England, but not all in the same place; he mixed his clay with drying substances, which were not merely sand, and could make his stones of any strength he pleased. His men had been tampered with by rivals, including 'a pretending architect, a meddling busy man' (who turned out to be Batty Langley), but that none could divulge his secret, for that was known to him alone. He could do anything in artificial stone that could be done in lead or cast iron. Reference is made to Holt in *An Essay on the Origin, Nature, Uses and Properties of Artificial Stone, Clays and Burnt Earths in General,* published in 1770 in London by Daniel Pincot. Holt is quoted by Pincot as the first writer on the subject. 'Holt's work,' he says, 'met with tolerable encouragement for some years till, the projector dying, the whole affair died also.' 'Holt's products,' he continued, 'were durable but without taste.' His goods were 'all covered on one side with an earthen glaze; and some of it is poorly painted with blue ornaments, baskets of flowers, etc.' Pincot, himself, relied on vitrification of the whole body. There had been other 'adventurers' in this field; their choice of materials and their treatment of them had varied; so had their success.

Pincot did not claim to possess any secret, nor was he impressed by the pretences of those who said they did. No natural clay alone had been found suitable for producing artificial stone; all needed the addition of some 'artificial clay,' and great care in burning was needed to avoid distortion. The ingredients must be partly vitrified, but 'the vitrifiable ingredients should be of the most obdurate class, by which means scarce any degree of fusion will be produced, until the heat is intense.' Working with such materials was expensive in fuel. Large pieces should be cut up after moulding and rejoined after burning. Pincot was, in 1767, a manufacturer of artificial stone in Goulston Square, Whitechapel; but in 1771, after Mrs. Coade had established her business in London, Pincot gave her address as his when he exhibited a copy of the Borghese vase at the Society of Artists. Like the Coades, Pincot was a Baptist and when he died in 1797 he was buried in Bunhill Fields. His connection with the Coades is by no means clear, but it seems not improbable that he had something to do with their installation in Lambeth.

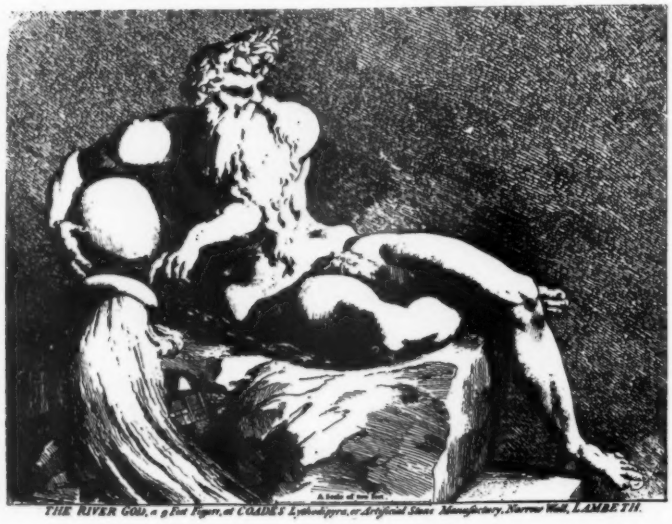
George Coade and Eleanor his wife (1709–1796) left Lyme Regis in 1769 and took over a property fronting on Narrow Wall, Lambeth, later known as Belvedere Road, beside King's Arms Stairs. A plan of the site is reproduced in Vol. XXIII of

the *L.C.C. Survey of London* (1951); also an old drawing of the building which shows what would appear to have been a private house with a long window in one side wall suitable for a studio and a weather-boarded factory building behind. Beyond the factory, though not visible from the front, was the space where material brought by water could be landed and stored. At a later date, a more elaborate front was added with columns and decorations of Coade stone. Still later, presumably after the works had passed into other hands, the columns were removed, their bases were covered with pyramids of brickwork and so the building remained as No. 43, Belvedere Road, beside Turban Wharf, until demolished in 1950 when the site was cleared to make way for the South Bank Exhibition. A trench cut across the site during the clearance revealed a grinding pan about 5 or 6 feet below the modern road level. Numerous moulds, pieces of Coade Stone and other relics now preserved at London's County Hall were found at the same time. It is to be hoped that, before the ground is again built over or otherwise utilized, it will be possible to re-examine the site, as there may be much else of interest still buried.

George Coade died in 1770 and can, therefore, have had little to do with the development of 'Coade's Lithodipyra Terra-Cotta or Artificial Stone Manufactory.' Mrs. Eleanor Coade was over 60 years of age. They had not been trained as potters, and it was probably to provide for their unmarried daughter, Eleanor (1733–1821) who was 36 years of age, that the works were started. She appears to have been a capable business woman and herself a modeller—a branch of commercial art in which a 'lady' could engage without loss of caste. It was common at that time to refer to women in business, whether married or single, as 'Mrs,' and it is, therefore, not clear whether mother or daughter is meant when references are made to 'Mrs. Coade.' The daughter may from the start have been the active head of the business. Mrs. Coade died in 1796, at the age of 88. The son of her sister Mary, John Sealy (c. 1750–1813) was taken into the business as a partner and so remained until his death in 1813. The business meanwhile ran under the style of 'Coade & Sealy.' After Sealy's death, William Croggon (d. 1835) another relative of the Coades and already in their employ assumed control, but continued to run the business under the old name for some years though he later changed it to 'Croggon & Co.' Many of the moulds still carried the name of Coade and that name, with the date May 24, 1837, was scratched on one of the paws of the Lion which, until 1950 faced the Victoria Embankment from the top of the Lion Brewery on the South Bank of the Thames, 1. Even as late as 1837, the name Coade presumably stood for quality, though by that date the firm had many competitors, including several such as Blanchard and Rossi who had started business on their own after working for Coades.

1, *the lion from Francis Edwards' Lion Brewery, 1837, which stood on the Festival of Britain site. It now stands in York Road at one of the entrances to Waterloo Station.*

The early designs in Coade Stone were nearly all modelled by, or under the direction of, John Bacon (1740–1799) and it was probably to his skill in reproducing, and even mass-producing, excellent copies of much admired classical figures that the firm owed their almost immediate success and high repute. From 1754 to 1762, Bacon served an apprenticeship as modeller to a Lambeth potter named Crisp. On the foundation of the Royal Academy in 1768, Bacon entered it as a student and in the same year won a gold medal from the Society of Arts. He continued his private connection as a sculptor in marble after joining Mrs. Coade, though his work at the Manufactory must have occupied a very



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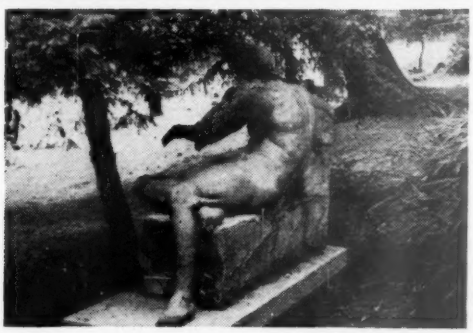
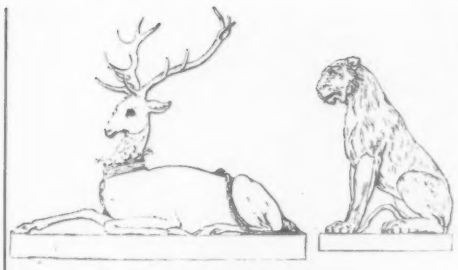


4

2, William Blake's etching of a River God, which was adapted by Bacon both in bronze and Coade Stone; two examples of the latter being at Ham House, 3, and in the Terrace Gardens at Richmond, 4.

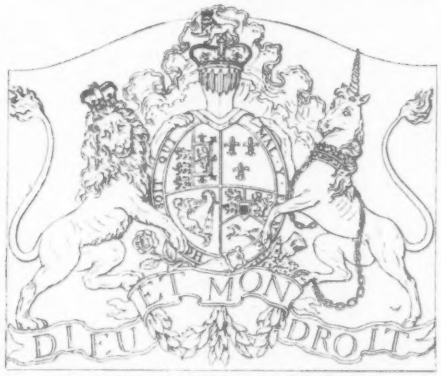
considerable part of his time. Some idea both of the extent and the quality of his work can be gained from a perusal of the thirty-six plates and etchings of works available in Coade Stone which are bound in a folio volume in the British Museum Reading Room. There is no printed title or description, but a prefatory note in pencil states that the plates were 'published only for private circulation in the years 1777, 1778 and 1779, no doubt under the superintendence of John Bacon the Sculptor, who was for many years the real proprietor and monitor of this artificial stone manufacture.' The first plate shows a large figure of a River God, 2, etched by William Blake. Bacon adapted this design for the figure of the Thames, in bronze on his statue to King George III at Somerset House, and in Coade Stone at Ham House, 3, and in the Terrace Gardens at Richmond, 4. Casts of the keystones shown in 5 are still in evidence over the doorways of houses in many London squares: Bacon drew many animal figures

5, *Coade Stone keystones, seen in Bedford Square, for example.*



6, *drawings by Bacon for the Coade manufactory.*

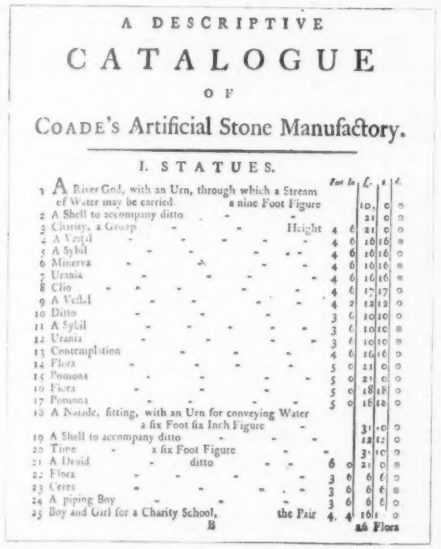
such as those shown in 6. The juxtaposition of these figures on one sheet is presumably fortuitous, notwithstanding the nervous expression on the face of the White Hart and the hungry gleam in the eye of the Lioness. Bacon showed several variations of the Royal Arms of which 7 is one; an actual but later example with the proportions of height to breadth adjusted to suit a low-pitched pediment is shown in his figures of a Charity School Boy and Girl, 9, still to be seen above the doorways of schools of the period. Examples from St. Botolph's, Bishopsgate, London, 10 and 11, show some modifications to dress which suggest either that the modelling did not exactly follow the drawing, or that more than one set of moulds were made. Commenting on this Catalogue, John Summerson goes so far as



7, *a design for a Royal Arms in Coade Stone.*

to say that it 'proves that most of the architectural ornaments in the West-End of 1774 onwards came from Lambeth.' (*Georgian London*, 1945, p. 113.)

A printed *Descriptive Catalogue of Coade's Artificial Stone Manufactory* was issued in 1784. In this were listed 778 articles, with their height, width and price, 8. They varied from the 'River God with an Urn through which a Stream of Water may be carried,' a nine-foot figure priced at £105, to small decorative pieces costing a few shillings. There were no illustrations. In the 'Advertisement' the reader was referred for proof of the durability of the firm's products to its use in 'a great number of very capital buildings in this and other kingdoms.' There had, however, been imitations by other manufacturers some of which had been 'ascribed to this factory —an instance of which misapplication is a Gateway, leading to Syon House, in the Brentford Road.' This gateway, designed by Adam for the Duke of Northumberland, was richly embellished in artificial stone



A DESCRIPTIVE

CATALOGUE

OF

COADE's Artificial Stone Manufactory.

I. STATUES.

		Feet In.	£.	s.	d.
1	A River God, with an Urn, through which a Stream of Water may be carried, a nine Foot Figure		10.	0	0
2	A Shell to accompany ditto		21	0	0
3	Country, a Group	Height 4 6	21	0	0
4	A Vestal	4 6	10	16	0
5	A Sybil	4 6	10	16	0
6	Minerva	4 6	10	16	0
7	Urania	4 6	10	16	0
8	Clio	4 6	17	17	0
9	A Vestal	4 2	12	12	0
10	Ditto	3 6	10	10	0
11	A Sybil	3 6	10	10	0
12	Urania	3 6	10	10	0
13	Contemplation	3 6	10	10	0
14	Flora	5 0	21	0	0
15	Pomona	5 0	21	0	0
16	Flora	5 0	18	18	0
17	Pomona	5 0	18	18	0
18	A Nutade, fitting, with an Urn for conveying Water a fix Foot fix Inch Figure		31	10	0
19	A Shell to accompany ditto		12	12	0
20	Time a fix Foot Figure		31	10	0
21	A Druid ditto	6 0	21	0	0
22	Flora	3 6	6	6	0
23	Ceres	3 6	6	6	0
24	A piping Boy	3 6	6	6	0
25	Boy and Girl for a Charity School, the Pair	4. 4	10	1	0

B 26 Flora

8, *part of the Coade catalogue.*

9

10

11

9, *drawings for a Charity School boy and girl, and the designs as actually executed, for St. Botolph's, Bishopsgate,* 10 *and* 11.

which began to perish within a few years. Coade's were called in to replace the faulty work, 13 and 14. It has been suggested that the stones which still show clear details are the Coade replacements.

During the period in which the business ran under the style of Coade and Sealy, several historical works were published which dealt with the antiquities and industries of Lambeth including in the latter the Coade Manufactory. As sources, these books have little relevant value as their information is generally culled from the 1784 Catalogue, but they have been quoted by subsequent writers on Coade Stone. Probably the earliest reference was in a paper on *The History and Antiquities of the Parish of Lambeth* which appeared in a collection entitled *Bibliotheca Topographia Britannica* (Vol. II, p. 82) published in 1786. Therein the stone was said to have 'a property peculiar to itself, of resisting the frost, and consequently of retaining that sharpness in which it excels every kind of sculpture, and equals even marble itself.' Quotations from the preface to the 1784 Catalogue included the warning to be drawn from the fate of Syon House Gateway. References were made to the work of Bacon, and two illustrations were reproduced: the River God, and the trade card of the firm. The trade card (see cover) showed : Fire, torch in hand, compelling Father Time to unhand Architecture: in the background was an open kiln. The establishment of the factory was also noted by Thomas Pennant, Daniel Lysons and Owen Manning. There were several references in *The Gentlemen's Magazine* for 1792 (Part II, pp. 588 and 805). Correspondence elicited the information that a certain monument in Battersea Church had been 'made under the inspection of *Miss Coade*, the owner of the factory and the daughter of the person who discovered the composition.' This statement, doubtless correct in its reference to Miss Coade, since Mrs. Coade (the mother) was then 84, had led some later authors to credit the invention to Mrs. Coade's father!

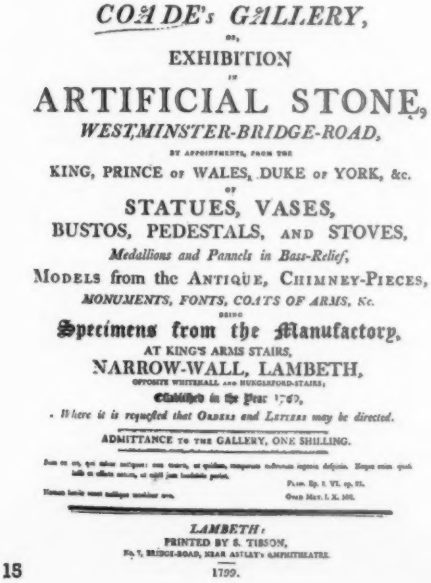
12, *the group from the Pelican office in Lombard Street, now at the Geffrye Museum.*

By 1799 the Coade Manufactory was so well known, and the number of visitors to the works had so increased, that it had been decided to open an exhibition gallery fronting on to Westminster Bridge Road, and to charge an entrance fee of one shilling, 15. The building itself was elaborately decorated with designs by John Bacon carried out in Coade Stone. Its outstanding feature was a porch with caryatides carrying the superstructure, including a group of the three figures which had already appeared on the trade card, but more compactly arranged. The panel was 9 feet wide by 10 feet high, 22, and bore the legend 'The Attempts of Time to Destroy Sculpture and Architecture defeated by the Vitrifying Aid of Fire.' The preface to the Catalogue to this exhibition followed on much the same lines as that of the earlier publication of 1784, including the reference to the failure of Syon House Gateway. Prices were not given, but there was a long list of the work done and the buildings on which it could be seen. The frontispiece was a print of the group made for the façade of the Pelican Office, Lombard Street, London, and now preserved in the grounds of the Geffrye Museum, Kingsland Road, London, 12. Bacon, who was responsible for the design of the building and most of its contents, died before the exhibition was ready to open, and his place we are told had been filled by Mr. John de Vaere (many years resident in Rome) and 'now constantly engaged at the Manufactory'. According to Jewett (see later), Flaxman, Banks, Rossi and Panzetta also modelled for Coade's at one time or another.

An obituary notice of John Bacon in the *Gentleman's Magazine* for September, 1799 (pp. 808–810), was in 1801 expanded into a booklet entitled *Memoirs of John Bacon, Esq., B.A., with Reflections drawn from a Review of his Moral and Religious Character* by Rev. Richard Cecil, M.A. Cecil wrote in a vein of hero worship. 'It was,' he stated, 'during Mr. B's apprenticeship that he formed the design of making statues in artificial stone which he afterwards perfected. By those exertions, he recovered the manufactory at Lambeth, now carried

13 14

13 *and* 14, *the western gateway to Syon House, by Robert Adam. The close-up shows blocks that have weathered unequally, supposed to be Coade stone replacement, above, and original imitation Coade stone, below.*
15, *right, an advertisement for the Coade exhibition gallery.*



COADE's GALLERY,
OR,
EXHIBITION
OF
ARTIFICIAL STONE,
WESTMINSTER-BRIDGE-ROAD,
BY APPOINTMENTS, FROM THE
KING, PRINCE OF WALES, DUKE OF YORK, &c.
OF
STATUES, VASES,
BUSTOS, PEDESTALS, AND STOVES,
Medallions and Pannels in Bass-Relief,
MODELS from the ANTIQUE, CHIMNEY-PIECES,
MONUMENTS, FONTS, COATS OF ARMS, &c.
BEING
Specimens from the Manufactory,
AT KING'S ARMS STAIRS,
NARROW-WALL, LAMBETH,
OPPOSITE WHITEHALL AND HUNGERFORD-STAIRS;
Established in the Year 1769,
Where it is requested that ORDERS *and* LETTERS *may be directed.*
ADMITTANCE TO THE GALLERY, ONE SHILLING.
LAMBETH:
PRINTED BY S. TIBSON,
No. 7, BRIDGE-ROAD, NEAR ASTLEY'S AMPHITHEATRE.
1799.

15

on by Mrs. Coade, and which, before Mr. B. undertook the management of it, had fallen into very low circumstances.' The 'now carried on by Mrs. Coade' must actually refer to Miss Coade, for Mrs. Coade had died in 1796, before the original article was written. That Bacon undertook the 'management' is improbable. Whatever his status in the manufactory, however, Bacon was responsible for most of the designs which went into production over a period of thirty years.

A view of the symbolic group above the porch of the Exhibition Gallery was reproduced as the frontispiece to *The European Magazine and London Review* for January, 1802. An article in the text (pp. 7 and 8) largely followed the wording of the Exhibition Catalogue of 1799.

The works of 'Coade and Sealy, established 1768,' received favourable mention in 1807 in a compendious work on *London* by David Hughson, LL.D. (Vol. IV, pp. 522–530). 'The high degree of fire,' wrote Hughson, 'to which this artificial stone is exposed in the kilns, gives it a durability resembling jasper or porphyry.' On buildings which had been burnt down (of which several were mentioned by name) 'it has not received the smallest injury, on the contrary, fire purifies it.' The failure of imitations to resist frost was stressed, and the case of Syon House Gateway was quoted yet again. The remainder of the reference consisted of quotations, including descriptions of statues and the like, from the Exhibition Catalogue.

A visitor to the works contributed his impressions to *The Somerset House Gazette and Literary Museum* for March 13, 1824. 'The art,' he wrote, 'is about 50 years old in this country, the Manufactory, though still known by the name of Coade is now conducted by Mr. Croggon who showed us over the different parts of the establishment with perfect politeness.' The visitor described some of the statues he saw; models by Bacon were still in production. 'There was,' he continued, 'some shyness about the materials of the composition of this artificial stone, but chiefly in the proportions of the ingredients.' The article is important, however, in that it described the treatment given to the models between moulding and burning; to this we shall return later. The visitor also saw 'scagliola' work in progress—a facing of artificial marble applied to artificial stone on a wood frame. A reference was made to Coade Stone in the section on 'Fountains' (1972, p. 987 of the 1842 edition) in Loudon's *Encyclopaedia of Cottage, Farm and Villa Architecture and Furniture* first published in 1833. Loudon stated that 'With the artificial stone of Austin' [a cast concrete] 'or the kiln-burnt artificial stone of Coade and Sealy, which is as durable as the hardest marble . . . there is now no difficulty in constructing the most beautiful garden fountains at a trifling cost, in the grounds of every villa.'

There are two accounts of the fate of the Coade tradition at the hands of Croggon. In *A Topographical History of Surrey* by Edward W. Brayley, F.S.A. (1841–1848), it is stated that 'About 1827 the manufacture was removed by Messrs. Croggon & Co. to the New Road [later known as Euston Road] near Tottenham Court. Another removal has since taken place; and the business is now carried on under the firm of Austin and Seeley, in Keppel Row, in New Road.' In *The Ceramic Art of Great Britain*, by Llewellyn Jewitt, F.S.A. (2 vols., London, 1878, see Vol. I, p. 138 f), it is stated that Croggon disposed of the business to Messrs. Routledge, Greenwood & Keene, who were succeeded by Messrs. Routledge & Lucas. It is interesting to note that it was John Danforth Greenwood and Richard Wynn Keene of Belvedere Road, Lambeth, who took out the original Patent (No. 7580 of 1838) for the material described as 'Keene's Cement' and still known by that name. In 1840, the partnership was dissolved and the stock in trade was sold. Many of the models and moulds were acquired by Mr. H. N. Blanchard of Blackfriars Road, who had been an apprentice at the Coade works and who himself supplied the facings for a number of important buildings in terra-cotta—the Brighton Aquarium, the old Royal College of Science and the Natural History Museum at South Kensington, and the Station Hotels at Charing Cross and Cannon Street. At the time when Jewitt was writing (1878) Blanchard claimed to be the Coades' successor. If Jewitt's account is substantially correct, one can only suspect that Brayley's reference to Austin and Seeley is a confusion between Sealy, who died in 1813, and a later unrelated Seeley. Also, Croggon continued to work in Lambeth for some years after 1827.

Jewitt had come into the possession of a letter, which he quoted in full; it had been written to an employee by Miss Eleanor Coade to whom Jewitt referred as one of the founders of the firm—the two Misses Coade. Jewitt evidently regarded the two daughters, Eleanor and Elizabeth, and not their mother—Mrs. Eleanor Coade—as the founders. Another letter quoted in full by Jewitt is of importance in that it contains the only contemporary account (1790) of the operation of the furnaces; this will be considered later.

In Wheatley's *London, Past and Present*, published in 1891 (Vol. 3, p. 482), it is stated that 'On the north side (of Westminster Bridge Road) are some houses, on one of which (No. 266) is a stone inscribed Coade's Row, 1798. The name was given from its neighbourhood to Coade's manufactory . . . at one time an establishment of merit.' That memorial has disappeared; the frontage has been set back, and the site is now occupied by a Lyons' teashop.

References in works published during the present century are, except for the LCC Survey volume, compilations from earlier sources. The *Victoria County History of Surrey* refers in passing to Lysons, Manning & Bray and Thomas Pennant, but bases its main account on Jewitt. In 1910, *Notes and Queries* published correspondence on Earthenware Tombstones in Nottinghamshire, including a letter from an enquirer who had failed to identify a sculptor, Coade, whose name he had seen on several monuments. The reply, by W. P. Courtney, under the title *Nottinghamshire Earthenware Tombstones; Holt, Coade and Artificial Stone*, took the form of a digest of what was known of Coade Stone. Well-illustrated articles appeared in THE ARCHITECTURAL REVIEW of June, 1913, and in *The Connoisseur* of October, 1928. The fullest popular account of the Coades and their productions is contained in two articles contributed in 1940 by Mrs. Esdaile to *The Architect and Building News* (January 19 and 26 of that year), but Mrs. Esdaile's treatment though interesting and well illustrated is somewhat uncritical. Reference has already been made to the account of the works which appeared in the *L.C.C. Survey of London*, Vol. XXIII (1951) but that account is tantalizingly brief, and some time may elapse before it is supplemented by a fuller publication of the mass of material from which it was condensed.

Though many literary sources have been quoted, the technical information they contain is meagre. None of the contemporary authors throws any light on the source of the materials, or on the method of preparing them for use. The moulding process as carried out in 1824 was described in a magazine article, and the firing of the furnaces in a letter dated 1790 reproduced by Jewitt many years later; otherwise the authorities are silent.

During the preparation of the South Bank site for the Festival of Britain, 1951, the buildings in Belvedere and adjoining roads were demolished, and as already mentioned a trench which was cut across the former site of the Coade works revealed a grinding pan some 5 or 6 feet below the street level at that time. The bed of the pan was of granite—it can still be seen in front of the Festival Hall—about 5 feet in diameter with a square central hole just over a foot across. The rim of the pan was formed by pieces of Coade Stone, of angle section, which gave the completed pan an internal diameter of just over 7 feet, and a depth of 13 inches. Under the joint between the granite bed and the Coade Stone rim small quantities of white clay were found, and under the rim some fine fired-clay grog. Among the spoil from the trench some grogged body was found and numerous pieces of 'stone,' including one with an obvious fire crack. Samples of these materials were examined at the Building Research Station of the Department of Scientific and Industrial Research. Mineralogical analysis by X-ray and by differential thermal methods has shown the clay to be a fairly well crystallized kaolinite with a small proportion of white mica. Measurements of its plastic properties by the usual methods of soil mechanics have confirmed that it is a kaolin and not a ball clay. (Many ball clays, like kaolin, consist of the mineral kaolinite, but differ from kaolins in having a finer particle size and hence greater plasticity.) Samples of Coade Stone taken from buildings have been examined in thin sections under the microscope and seen to contain in an amorphous matrix finely ground quartz, flint and glass, but not all in the same samples of stone. X-ray examination of the matrix, and its appearance under the microscope suggest that it may be meta-kaolin, a material derived by heating clays of the kaolinite type to temperatures between 450°C. and 950°C. Only examination of a considerable number of specimens

of known date could settle the question as to whether there was a systematic change in the minor ingredients over the years, or whether one substance or another might be used at any time according to its availability. So far the number of specimens available for examination has been too few to justify drawing any general conclusions.

The Chemical Branch of the Public Health Department of the London County Council examined some specimens of material collected from the site of the works in 1950 and commented on the high potassium content, fairly high sodium content and appreciable titanium content. These suggested that a marl (say a chalky clay), or perhaps a felspar were added to act as a flux. (The crushed glass or 'cullet' found in one of the microscope sections by the Building Research Station would also help to bring down the temperature at which vitrification would begin.) The Council's Chemist comments that although titanium oxide has in recent years been used in the ceramic industry to produce hard, white, acid-resisting porcelain enamel, its deliberate use at the time of the production of Coade Stone would have been exceptional. We are in fact left with the knowledge that Coade Stone contained as its main ingredients china clay with a finely ground grog prepared from broken Coade Stone either mixed with, or used alternatively to, sand. There were also small amounts, probably varying from time to time, of other materials found to have a useful effect in reducing the furnace temperature needed to produce vitrification. What experiments Coades made with various fluxes, and whether they thought their use of any ingredient was an important secret, or merely allowed competitors to imagine they held such a secret, is one of the things we shall probably never know.

The jealously guarded secret and the cunning snooper appear in nearly every story of invention and industry at the time of the Industrial Revolution. Many of these stories were romantic nonsense, but in some there was a modicum of truth; for if the merit of a particular way of working was the result of long experiment and observation, the inventor had no incentive to communicate the result of his own sweat and tears to less able and industrious competitors. Such communication would bring him neither business nor kudos; for there were no technical journals or societies. Machines and mechanisms could be explained by drawings, but for processes there was no adequate scientific terminology in which even the most communicative inventor could accurately have described the technical details. There were no standard tests whereby to measure, nor even precise terms in which to define, the properties of materials. Chemistry was still a qualitative branch of Natural Philosophy and combustion was still discussed in terms of phlogiston. Advances in all branches of technology depended on the skill and imagination of the technician in devising empirical improvements and experimental novelties without knowing the scientific explanation as to why one procedure worked better than another.

The visitor who described in the *Somerset House Gazette* what he saw when Croggon conducted him round the works in 1824, and as already quoted commented on some shyness about revealing the composition, is the sole authority on the preparation of figures and the like before burning. Articles, he reported, were first formed roughly in a mould; 'then polished by the chisel while in the soft state, which they endeavour to preserve by wrapping the block carefully in wet cloths. In some cases particular enrichments prepared in matrices are added; and in others the whole is nearly the work of the hand.' The procedure reminded the writer of what he had observed in Chantrey's workshop, where designs were modelled in clay to be copied later in marble.

For an account of the firing process we are indebted to Jewitt. Although he wrote, in 1878, long after the production of Coade Stone had ceased, he had come into possession of a letter written in 1790 by one J. Lygo addressed to a manufacturer in the Midlands who wanted to engage an experienced fireman. W. J. Coffee, fireman in 1790 to Coade & Sealy appears to have lost an argument with the firm about his remuneration and to have 'walked out on them.' Lygo thought Coffee might be of service to his friend, and having plied the disgruntled fireman liberally with punch persuaded him to talk about his work. Coffee's story (given in full by Jewitt, and here summarized) was as follows: he had had the entire management of the kilns for many years, building, setting and firing. He was paid one guinea a week and an extra allowance for every night on which he fired a kiln—2s. 6d., 3s. and 3s. 6d. respectively for the small, intermediate and large kilns. The largest was 9 feet in diameter and about 10 feet high. There were three fire-holes, about 14 inches across in the clear, to each kiln. Coades made 'no use of saggars, but their kilns are all muffled about two inches thick which was always done by this fireman.' Firing was done with Hartley coal; it continued for four days and nights, and the moment the goods were fired-up he stopped all openings close without lowering the fire. No 'thermometer' was used; temperature control depended on the judgment of the fireman. The composition shrank about half-an-inch in the foot during drying, and about the same again in firing. Many of the articles were 4 inches thick, and he had fired figures as much as 9 feet in height. The covering letter stated that the fireman seemed confident that Coade's would shortly call him back, as they could not do without him. He had heard from another man still in the works that 'they have had very great losses in the kilns since he left, and that they have lost everything in the large kiln.' Apparently Coffee did resume his work at Coades, for Jewitt reproduced

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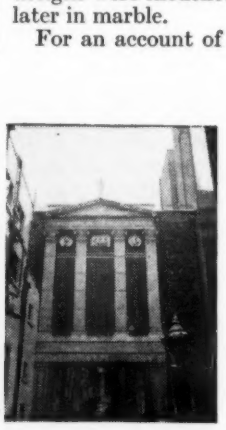

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Examples of the excellent present day condition of Coade stone ornaments: 16, *in front of the Soane Museum.* 17, *Robert Adam's Royal Society of Arts building, Adelphi.* 18, *on the garden wall at Ham House.* 19, *The Sealy tomb in Lambeth churchyard,* 20, *the Royal Arms in the pediment of what is now the Imperial War Museum.* 21, *Captain Bligh's tomb at Lambeth.*

another letter which was addressed to Coffee and signed by Miss E. Coade in 1792. In this she gave him sound advice to make up his quarrel with another employee, and tactfully approached Mr. Sealy who had been annoyed by the irregularities revealed by both men in their charges and counter-charges. This letter, in Jewitt's opinion with which we should concur, showed 'What a clear-headed, right-minded and well-disposed employer' Miss Coade was.

The statement in Lygo's letter that no 'thermometer' was used reads curiously today, but Josiah Wedgwood used the same word when in 1782 he communicated to the Royal Society a paper in which he described an instrument he had devised to measure furnace temperatures. It consisted of a gauge—a tapering channel of specified dimensions—and pieces or 'bits' of dried, unfired clay which were adjusted to slide down the channel to a definite zero mark. In the furnace, the bit contracted and slid further into the gauge, its final position serving to record the maximum temperature reached. Wedgwood carried out many experiments before he found the best mixture of clay and flint to use for the bits to give consistent readings. This invention is said to have been in considerable demand by furnace users, and Wedgwood was asked by Lavoisier to send him two to use in experiments he was making on 'the theory of "furnaces to fusion".' There was no means available at the time to correlate the readings with the Fahrenheit scale. (See *Trans. of the Ceramic Society*, Vol. 29, 1929–30, pp. 451–452.) Such an instrument does not appear to have been used in the Coade works. Control would still have depended on the skill and judgment of the fireman as it commonly does to this day, but the effect of his skill in producing the desired maximum temperature could have been checked.

Samples of the grogged clay found on the factory site were fired in the laboratory at the Building Research Station at a range of temperatures, and measurements were made of the bulk density, porosity and saturation coefficients of the fired specimens. It was shown that the body had a long vitrification range with a progressive reduction in porosity as the temperature of firing increased from 950°C. to 1,250°C. At 1,300°C. the body bloated. It would seem that a fired product resembling Coade Stone can be made, at a firing temperature kept in the region of 1,100°C. to 1,150°C., from the grogged clay of which that used in these experiments was a sample, but it is probable that in the works the temperature of vitrification was lowered by the use of one or other of the fluxes suggested earlier. The London County Council Chemist succeeded in producing a very hard, close-grained piece which might well have passed for Coade Stone (except that it was obviously not so homogeneously mixed and its physical properties were not checked) by gradually raising the temperature of a sample of grogged clay, similar to that used at the Building Research Station, to 700°C., 800°C. and 900°C. on three successive days, holding the maximum temperature for two to three hours, and then allowing it to drop slowly.

In the early Coade figures parts were joined by bronze dowels run-in with lead, but by 1824 when the works were visited by the writer of the article in *The Somerset House Gazette*, he reported that 'After the figure is completed in all its parts, it is cut into separate pieces, and is afterwards put together, firmly cemented, and iron rods introduced into the arms and other parts that may require to be strengthened.' While the Coade Stone is practically impervious to weather, the joints are not, and in some figures moisture has gained access to the interior and caused the iron to rust, swell and burst the stone. Where this has not happened, many pieces still remain in almost perfect condition, though their number has been sadly reduced by the demolition of the buildings they formerly embellished. In retaining the original clean outlines the work of Coades has proved more durable than that of their rivals and imitators. Examples of their work still in excellent condition are shown in 16 to 21. 17 shows the back (north) elevation of the House of the Royal Society of Arts, built by Adam in 1774. The masonry courses over the window are of Portland Stone. The pilasters, pediment and plaques above them are of Coade Stone. The repairs shown in 21 to Captain Bligh's tomb were to restore work damaged by hooligans, not by time. The popular attribution of the quality of Coade Stone to some secret ingredient or process cannot be entirely discounted though, in the light even of the limited extent to which a laboratory study of the material has so far been carried, it seems more probable that the real secret of success was good works control, sound craftsmanship in modelling and consistency in mixing and firing. In its early days, the business was managed by Miss Eleanor Coade, a shrewd and capable business women. The modelling was in the hands of John Bacon, a highly-gifted artist capable of producing work which pleased the taste of discriminating buyers; his designs and replicas were in the height of the decorative fashion of the time; Robert Adam, James Wyatt and John Nash among others, used Coade Stone extensively. So much for the early success of the business in the hands of Eleanor Coade, John Bacon and John Sealy when they had the field almost to themselves.

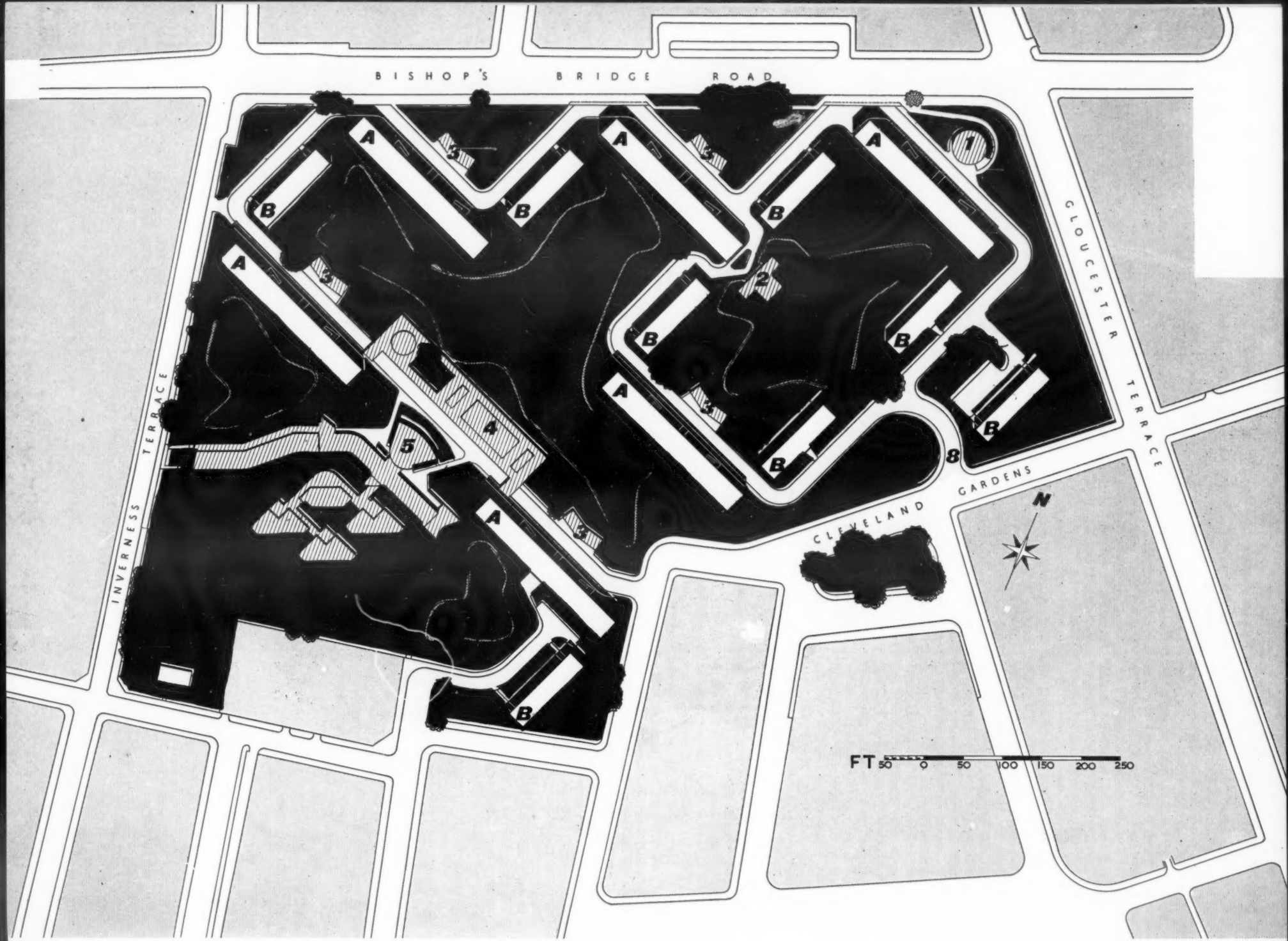
The business, however, faded out within seventy years of its foundation. William Croggon who carried on till 1835, and T. Croggon whose name appears on figures made between 1836 and 1839, may have been less competent than the founders in either the business or management side of the concern though technically, on the whole, pieces of late date bearing the Coade mark are still better than those produced by competitors, even by such as Blanchard and Rossi who had formerly worked for Coades. Probably the most significant cause of decline was a change of fashion brought about in the main by economic causes. Much of the wealth derived in the later decades of the eighteenth century from improvements in agriculture and from rapidly expanding trade and industry was dissipated in the long-drawn-out wars which ended only with the final defeat in Napoleon Buonaparte. Something less costly than the lavish decoration of the 1770's had then to suffice. Stucco largely took the place of dressed stone in façades. Coade Stone had proved less expensive than carved marble or Portland stone, but for the garden ornaments of the post-war period cast iron and precast concrete proved less expensive than Coade Stone.

22. *Coade & Sealy's trade card*, 1799.

Before the Houses of Parliament were rebuilt in the 1840's, an exhaustive enquiry was made into the properties of many types of natural stone. The use of artificial stones was not considered, though the practice was not unknown of using natural stone in decorative work in the lower storeys of buildings and Coade Stone for work less accessible to the critical eye but more severely exposed to the weather. There were some then, as there are now, who would have regarded with horror the suggestion that even so good an artificial material as Coade Stone should be used to embellish the robes of the Mother of Parliaments! But had Coade Stone been so used (and the use of iron cramps and dowels been avoided) our generation might have been spared much replacement.

A taste for terra-cotta revived about the 1870's, but some of the red or reddish varieties then popular were underburnt and had not the enduring quality of Coade Stone. There would today be no difficulty in producing a material similar in appearance and in durability to Coade Stone, but this age of austerity makes little demand for decoration of any kind on buildings. It is to be hoped, however, that a revived interest in such products will lead to greater care in preserving them when and where they are found in their own appropriate setting.

In conclusion, the author wishes to acknowledge his indebtedness to the Director of Building Research for permission to publish information gathered in the course of his official duty, to colleagues at the Building Research Station, and to the Chemist-in-Chief of the Chemical Branch of the London County Council's Public Health Department, for access to his report on the laboratory investigation of materials from the site of the works and elsewhere, to the Librarian of the London County Council, to the Historic Buildings Section of the London County Council Architect's Department, and particularly to Mr. F. J. Collins of that Section, for their courtesy in freely placing at his disposal the results of their own historical research.


BISHOP'S BRIDGE ROAD
INVERNESS TERRACE
GLOUCESTER TERRACE
CLEVELAND GARDENS
N
FT 50 0 50 100 150 200 250
A
B
1
2
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4
5
8

Hallfield Estate, Paddington, is one of the few large English building-developments since the war in which a clear emphasis is placed on the formal geometry of the plan. Though no master-axis rules the whole scheme, the site layout opposite  *shows that an observer walking among the buildings would continually find axes of local symmetry in the disposition of the ten-storey (A) and six-storey (B) blocks of flats. These axes would be reinforced by the symmetrical elevations of the blocks, discussed in the article that follows, and by the disposition of the smaller buildings: the laundry, 1; nursery school, 2; garages, 3; forum,* 4; and the primary school, 5. Other features of the site are: play-spaces, 6 and, because the circulation-level is below the street, access to the site by ramps for pedestrians, 7 (yellow paths adjacent to numerals), and for pedestrians and vehicles, 8. The whole scheme is described and illustrated on pp. 308-318.*

* Comprising a second communal laundry, heating sub-station, shops, public house, clubroom and terraces.

Reyner Banham

FAÇADE

ELEVATIONAL TREATMENT OF THE HALLFIELD ESTATE PADDINGTON

The immediate impression of the visitor who comes upon the Hallfield Estate from Bishops Bridge Road, and is confronted suddenly with the flat frontage of the first block, is that the architect has dealt with his façade in an original, obtrusive and alarming manner. Obtrusive and alarming because façade treatments do not form part of the common theory of the Modern Movement as our elders and betters have left it. In the pure theory the problem of the façade does not exist—form follows function, and when the problems of the interior have been correctly resolved the exterior form will be found to have crystallized into an unarguable solution. Or, if this be too sanguine a manner of phrasing a widely held idea, one may use the alternative formulation—the modern architect is not interested in façades, but allows his elevations to express the inner workings of his building. Either way this is a rather negative formulation; part of the literary impedimenta of the modern movement, useful to the critic defending the Bauhaus to a cornfed audience of Ruskinians, but little use to Gropius when he set out to design the building, or to Drake and Lasdun mentally confronted with the ten-storey cliff of one of those man-warrens which high-density development invariably produces.

So, in spite of the fact that facades must be dealt with somehow—and many of the architect's most purely aesthetic decisions are concerned with facings and fenestrations—we prefer that it should appear that these decisions were forced upon the designer by structural, technical or functional considerations which were almost beyond his control—climate, column-loadings, privacy, for instance—and feel embarrassed when we see facades like those of Paddington which have been treated as works of art in their own right.

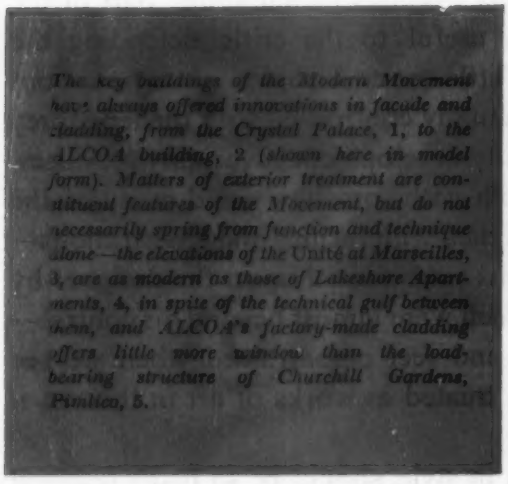
Just why this treatment, and others related to it in style, should be so badly received

is a problem which needs to be examined, because it bears upon the psychology of the Modern Movement. Every landmark building in that Movement has offered something sensational in the way of elevational treatment, from the Crystal Palace, 1, to the Alcoa building in Pittsburg, 2—and that almost irrespective of the building technique employed. The crusty surface of the *Unité* at Marseilles, 3, is as much a contribution to the Movement as the Perpendicular-Gothic ripple of Lakeshore Apartments, 4, but by comparison with the latter, the building methods used at Marseilles were almost two millenia out of date, and Alcoa's proportion of window to pressed-aluminium wall is almost as small as that found in the 'traditional' construction of Churchill Gardens, Pimlico, 5, with its wet-built mass-walling. This must be emphasized in order to remind ourselves that though certain manners of wall treatment are specific to the Modern Movement, and of the greatest importance to it, the unthinkingly-held equations between dry-construction and open-grid façades, and between wet construction and small windows, are fallible and must be discarded from serious discussion of the problem. The ultimate factor deciding the appearance of a building's elevations is apt to be an aesthetic decision pure and simple—but an aesthetic decision which cuts deeper into the philosophy of architecture than any other the architect may be called upon to make.

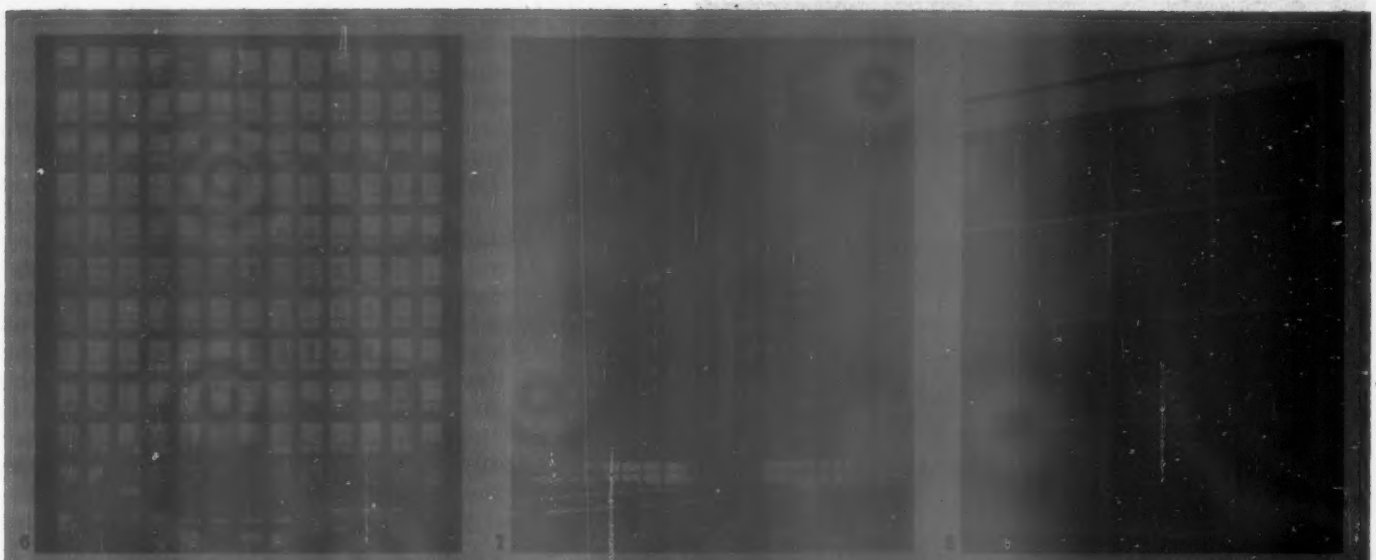
Put bluntly, that decision is whether to show, or to conceal, the contents of the building. If the contents of his structure should be some large elegant machine, the interlacing flights of a staircase or something which the client wishes to be brought to public notice, then the problem will more or less solve itself, but if the building is a man-warren of offices or flats, then the architect faces the very core of the question. In an inhabited building of any size the contents, if displayed, are apt to present a kind of statistical chaos, in which the constant elements, apart from the grid of floors and stanchions, exist primarily in time—the airing of blankets, flow of commuters in and out of the block, opening and closing of windows and curtains, switching on and off of lights. There is, however, a solid democratic tradition of valuing this statistical human disorder because it is human, and on the scale of man, and this attitude has been built into the Modern Movement by the futurists, with their love of the poetry of contemporary disorder, the dadaists with their passion for chance, and the surrealists with their high valuation of found objects (which are valuable simply because a human being has decided that they are). Summed up in the aesthetic of the Neutral Frame, this approach offers as something of value the group biography of its contents, anecdotally displayed to the casual passer-by. The display might be obvious, as in Chiolini's all-revealing Rossi office block in Milan, 6; more subtle as in Lakeshore Apartments, where it depends on a play of curtains and lights, 7; or almost underplayed, as in Tecton's small blocks at Priory Green, Finsbury,* which offers an anthology of working class still-lives, one in each window, 8.

This is human disorder valued because human, but it is equally possible within the Modern Movement to despise it because it is disorderly. The Movement is essentially two-faced, and its key monuments, as in the case of Cubist paintings, often present a critical dilemma because they combine a severe architectonic

* AR, October, '52.



The key buildings of the Modern Movement have always offered innovations in façade and cladding, from the Crystal Palace, 1, to the ALCOA building, 2 (shown here in model form). Matters of exterior treatment are constituent features of the Movement, but do not necessarily spring from function and technique alone—the elevations of the Unité at Marseilles, 3, are as modern as those of Lakeshore Apartments, 4, in spite of the technical gulf between them, and ALCOA's factory-made cladding offers little more window than the load-bearing structure of Churchill Gardens, Pimlico, 5.

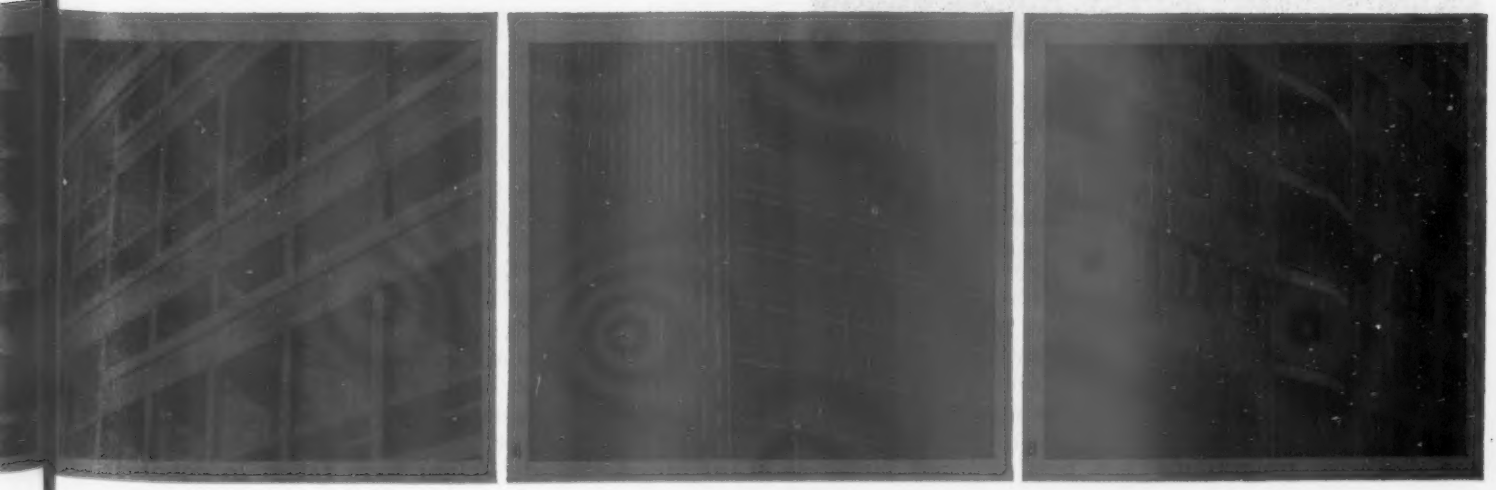


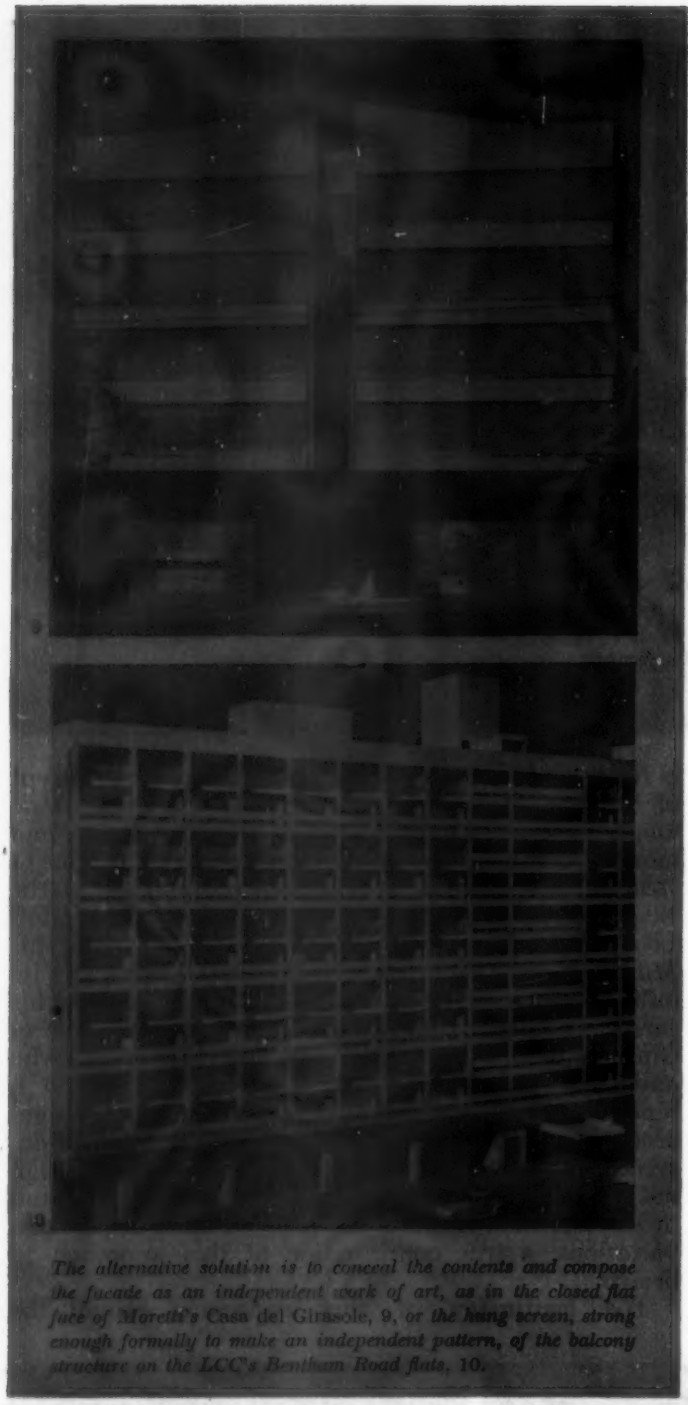
One solution to the problem of the façade of a large inhabited building is to treat it as a show-case for the activities of its contents—in an obvious way, as in the Lane Rossi *building in Milan, 6; more subtly in Lakeshore's play of lights and curtains, 7; or more restrainedly still at Priory Green, Finsbury, 8, with its gallery of framed still-lives in windows and balconies—all variants of the Neutral Frame.*

order which is instantly legible, with a wilful impulse of revolt and destruction which is almost inscrutable. The movement's spiritual history has been a dialogue between its twin demiurges—a disorder proper to an age which finds the universe mysterious, and filled with uncertainty principles, statistical mathematics and the activities of pure chance and mere probability; and, on the other hand, a concept of order which is the product of Man's long struggle to see his universe as simple, and governed by a select body of prime numbers and simple ratios.

If the architect opts for order, then he must effectively conceal the contents of his man-warren. He must put a filter between the inhabitants and the observer who, no longer merely a passer-by, takes up a well-trained stance on an axis, and expects to comprehend the façade as a unified whole, conformable in all its parts. The order he finds will, of course, be the order of academic planning and Beaux-Arts elevations, the only language of architectonic order which is really understood. The part played by this concept of order in making the Modern Movement need no longer be ignored or suppressed—the Beaux Arts had more to offer than applied pilasters, and the doctrine of structure and pure form had been propounded at the Ecole and by Auguste Perret some years before Adolf Loos wrote *Ornament and Crime* or Sant'Elia his *Manifesto of Futurist Architecture*. Traces of its influence lurk in Le Corbusier's work throughout his career, and are manifestly visible in the buildings of Ginsberg and Lubetkin. These two architects, who have abandoned academic detailing but deploy a repertoire of Modern Movement forms and usages according to the Beaux-Arts precepts of composition, symmetry, *parti* and plan, have been loosely, though not inaccurately termed 'Beaux-Arts Modernists' and in the Hallfield façades one sees, in spite of personal variations, a true continuation of this approach to design.

The legitimacy of this approach cannot be





The alternative solution is to conceal the contents and compose the façade as an independent work of art, as in the closed flat face of Moretti's Casa del Girasole, 9, *or the hung screen, strong enough formally to make an independent pattern, of the balcony structure on the LCC's Bentham Road flats,* 10.

questioned without equally questioning the validity of, say, Moretti's *Casa del Girasole*, 9, which is equally frank about the fact that it is drawing a screen over the activities of its contents, and in composing that screen on Beaux-Arts principles, or the LCC's Bentham road scheme, 10, which also hangs a screen between the building's contents and the observer outside. But this last example manages to look as if it were a Neutral Frame, and suggests that the fault of the Hallfield façades is simply that they so manifestly belong to the party of order at a time when the Modern Movement is having one of its periodic leanings in the other direction. Or the fault may lie in the manner in which the aesthetic programme has been worked out in detail—but, in any case, this aspect of the scheme deserves to be closely studied.

The basic considerations in the design of the large blocks are these: the construction has cross-walls at unusually wide centres—twenty-two feet—and there are three staircases, one at each end and one placed axially, but all on the same side of the block, which is also the access gallery side. Thus there is an essential difference in kind between the two façades—one being simply a screen drawn over the open ends of the cellular construction, the other being a series of superposed balustrades divided by a strong axial accent which the other façade does not possess. Given the order-loving Beaux-Arts approach both sides of the block must be reduced to legible compositions—this is clearly what the architects mean when they require that their design should 'communicate'—and these compositions must be visually stronger than any disorderly activities the human race may practise behind them.

The solutions evolved are as different as the nature of the two elevations could require. On the undivided side effort has been directed to decrease the apparent height of the block and reduce its apparent weight, and the main elements which contribute to this effect are the brick panels and the mullions between the windows, 12. The panels appear to float, because they rest, not on the apparent floor-slab, but on the edge of the upstand beam which the wide spans make necessary—thus their nature as mere fillers and not supporting masses is made clear. The mullions are another matter; they are arranged in discontinuous series so that within the surrounding frame there are no vertical accents running through the building from top to bottom except those of the frame itself. These hit-and-miss uprights give considerable offence to those who cannot think away the continuously superposed cross-walls within, though further inspection will show that it is a structural principle that none of these cross-walls shall penetrate the outer skin of the building and be subject to external temperature variations. The apparent wall-ends showing through between the pairs of windows are, in fact, simply pre-cast mullions which act as protective cappings to structural walls on one floor, and non-structural breeze partitions on the next, and wall, window and mullion should be seen together as a continuous protective skin. The grouping of the windows in alternating pairs on either side of the eye-catching light-toned mullions has the effect of diminishing the visual importance of the windows themselves and of bringing what might otherwise have been an indiscriminate peppering of fenestration into an orderly pattern. Criticism should concentrate on the problems of whether this pattern is sufficiently easy to grasp, and whether the status of the mullions as simply protective cappings has been made convincingly clear—to the extent that they look like structural wall-ends the nature of the skin has been compromised.

On the access façade, 11, the given elements are the balconies and the axial *parti* made by the arrangement of the staircases, but the balconies, running continuously across the block from side to side, would kill the axial partition and induce a sense of horizontal sprawl unless definite action were taken to counter

this effect. However, there are three points on each balcony where greater circulation space is required—at the landings of the central stair, and at each pair of refuse chutes—and at these points the balconies are widened. By emphasizing this functional differentiation with a change of facing, and separating it from the rest of the balcony with a short length of metal lattice, the architects have given three immediately discernible vertical accents equally spaced in a façade pattern which, by the vertical linking of the recessed parts of the balconies, has been rendered quite neutral and devoid of horizontal or vertical tendencies. The success of this device may be estimated by comparing the effect with that of the access-sides of the large blocks in Tecton's Priory Green development, 13, where the horizontal accent of the balconies has been given its full value. By contrast with this same development one may also see how jealously the sense of a screen has been preserved in Hallfield—in spite of the changes of plane the façade has a stiff and papery quality which is quite unlike Priory Green's massively plastic detailing, and there is a clear sense of a thin screening element fitted into the strongly accented surrounding frame.

This frame, too, plays its part in giving a comprehensible and legible quality to the composition. It defines the area to which the eye is to attend, and the canopy, which breaks forward through its upper part, serves much the same function as the cresting of a Baroque picture frame; apart from helping to emphasize the axial nature of the composition itself, it also relates it to the axial nature of the part of the site plan in which the block is situated—it will be noted that local symmetry exists throughout the plan, and a sense of axiality gives order and legibility to the whole layout. The cresting canopy is not repeated on the other side of the block, where the axial sense is much less developed, and one should also note that even the strong frame which does surround this composition is not able to correct the optical illusion of 'warping' which seems to affect all evenly gridded façades over a given apparent size—a problem which, as Denys Lasdun himself has pointed out, has only become apparent with the fulfilment of the Modern Movement's promise of large rectangular slabs of building set in open country.

This more detailed examination of the two façades gives one the clue to the shock which this building undoubtedly affords to routine-minded modernists. The concepts of structure and of function have been narrowed and, no longer applying to the building as a whole, in a generalized way, apply in an *ad hoc* and particularized manner to the major components of the block. It is not the cellular interior which is expressed, but the skin that closes the cells; it is not horizontal access which is emphasized, but changes in the nature of circulation. The decision to hang screens across the façades of a building does not necessarily enjoin this approach, but once the decision to use such screens is made, there are no compelling reasons—except aesthetic ones—for demonstrating the contents or the structure of the building on its exterior.

But aesthetic considerations may be compelling in the extreme and, however arguments about these blocks may be dressed up in sociological or functional guise, the real argument will always be on aesthetic grounds—at the most fundamental level, whether the contents of the building should be displayed or not; and then, if the decision is for the latter, on matters of hierarchy and method. Judgment under these latter heads can only be made on visual, not moral, grounds by scrutiny of the scheme as it appears when completed. It would be clear, even if the architect had not said it himself, that the intention was to present legible, 'communicable' façades to the public, and it is on these terms that the success of the design must be judged.

The solution for each façade of the Hallfield blocks was to conceal the contents, and to bring the facades into single, comprehensible patterns—on the west side a flat encircled composition without vertical or horizontal tendency, 11 (contrast the strong balcony lines and projections of Priory Green, 13) and on the east façade a composition in which no vertical lines are continuous, and all wall-elements appear to float, 12, in order to reduce the apparent weight of the block.

FLATS AT PADDINGTON

The Hallfield estate is a 17-acre site south-west of Paddington Station which was originally laid out with brick and stucco terraces and villas a century ago. The site averages 10 ft. below Bishop's Bridge Road and Gloucester Terrace; the original landscaping is said to be by Loudon, and has bequeathed many fine trees including London planes, lime, Lombardy poplars, chestnuts, sycamore, mountain ash, mulberry, magnolia and catalpa.

In addition to satisfying the urgent needs of the community in terms of dwellings, provision for communal needs is also an integral part of the plan. These will include primary and nursery schools, club room, laundries, public house, garages, shops, etc. The primary school is now occupied and the communal laundry which has been built with these blocks of flats is illustrated on page 318 of this issue. The over-all density of the development is 176 persons per acre, and the site coverage—the proportion of site area covered by blocks of flats—is 9.67 per cent. These figures show that the planning of the dwellings has been concentrated to secure the maximum open space. The housing is planned in ten-storey and six-storey blocks, aiming at the creation of an urban complex of buildings and arranged so as to achieve proper orientation of all dwellings, visual variety of precinct and vista in the layout, and separation of the community from fast moving traffic. The dwellings comprise flats containing from one to four rooms; access gallery planning has been adopted for economy, but no habitable rooms face on to the galleries. The ten-storey blocks have two central lifts large enough to take prams; the six-storey blocks have one smaller central lift and pram stores are provided on the ground floor. Kitchens, bathrooms and w.c.s are grouped together, and the plumbing is concealed in vertical and horizontal ducts. Refuse disposal is effected by means of chutes, with hoppers on each access gallery, discharging into sealed chambers at ground floor level.

The planning of the flats required that party walls should be at 23 ft. centres. These walls were formed in concrete and used as vertical supports, and to gain wind stability. The resulting structures, therefore, consist of a series of continuous vertical and horizontal slabs with rigid joints. The detailed design has been based on the recommendations of the British standard code of practice No. 114 (1948), and the system is illustrated on page 310. The external panels within this frame are made of 4½ in. reinforced brickwork, and all external walls have a lining of 2 in. insulation block with a 2 in. cavity between.

The access gallery balustrades are constructed of precast stone which is used as permanent shuttering. On the ten-storey blocks this stone contains an aggregate of grey and white Cornish granite, which is exposed on the face by polishing. On the six-storey blocks the gable walls and the columns on the access galleries have been clad by the same system with precast panels finished with a Portland stone face. Between the columns the perforated balustrade panels are of black precast stone and have a raised pattern which is polished. The wall behind the access galleries, and the east elevation of the six-storey blocks, are faced with red Dunbriks; on the south side of the ten-storey blocks red Dunbriks and Staffordshire blue bricks are used on alternate floors. The gable ends of these blocks, and the frames surrounding the main elevations are faced with ceramic frostproof tiles. The laundry wall is faced with black Dunbriks, and the precast louvres between the windows and the fascia are finished in Portland stone as on the other blocks. The central heating is derived from the boiler plant of existing public baths in Queens Road, via ducting to substations on the site. These reduce part of the steam to a pressure between 2 and 5 p.s.i.g. for the heating installation, and feed the remainder direct to hot-water storage calorifiers which supply hot water to the flats. The heating works on the Vacuum Return System, a pressure differential being maintained between the steam and condense lines. A steam main is taken to the centre of each block and rises to the roof where branches are taken to feed a number of drop pipes. These run through to the ground floor and are drained through trap sets in a trench running along the building. All condense is returned by the vacuum pumps via the substation to the boilers. Living rooms and bedrooms are heated by skirting board convectors which are illustrated on page 318.

FLATS AT PADDINGTON

Designed by Tecton: architects for the development and execution of the scheme, Drake and Lasdun; chief assistant, Alex Redhouse; structural engineers, Ove Arup and Partners

1, north-east elevation of 10-storey block seen from Bishop's Bridge Road. The roof structure houses hot and cold water storage and lift equipment. Only kitchens, bathrooms and entrance halls face on to the galleries.

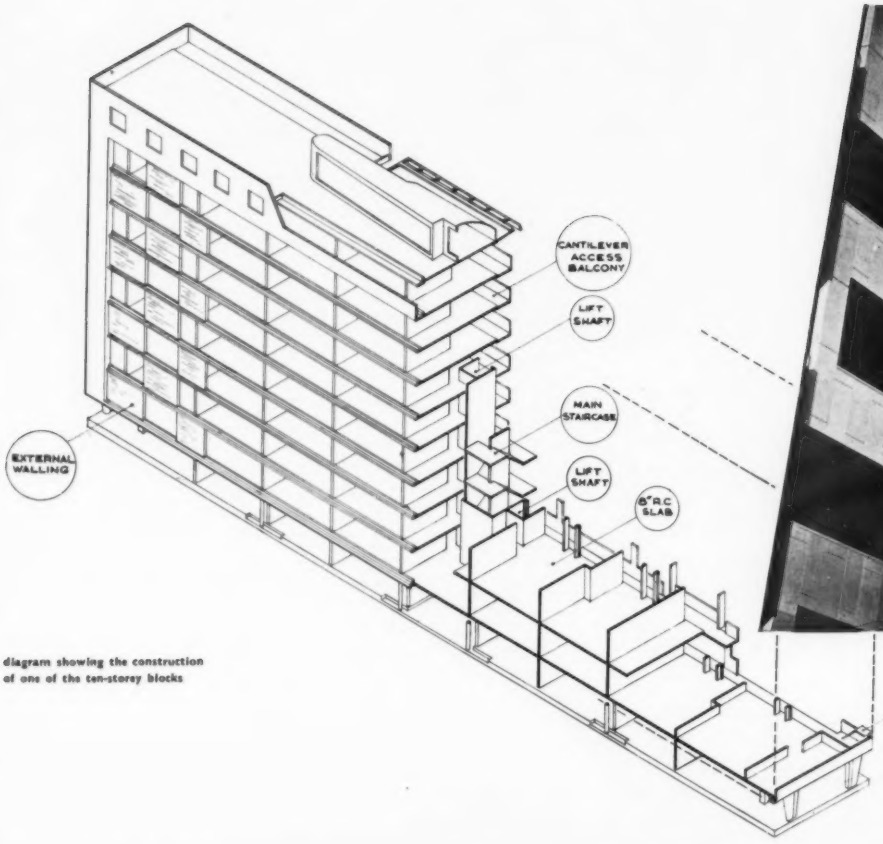
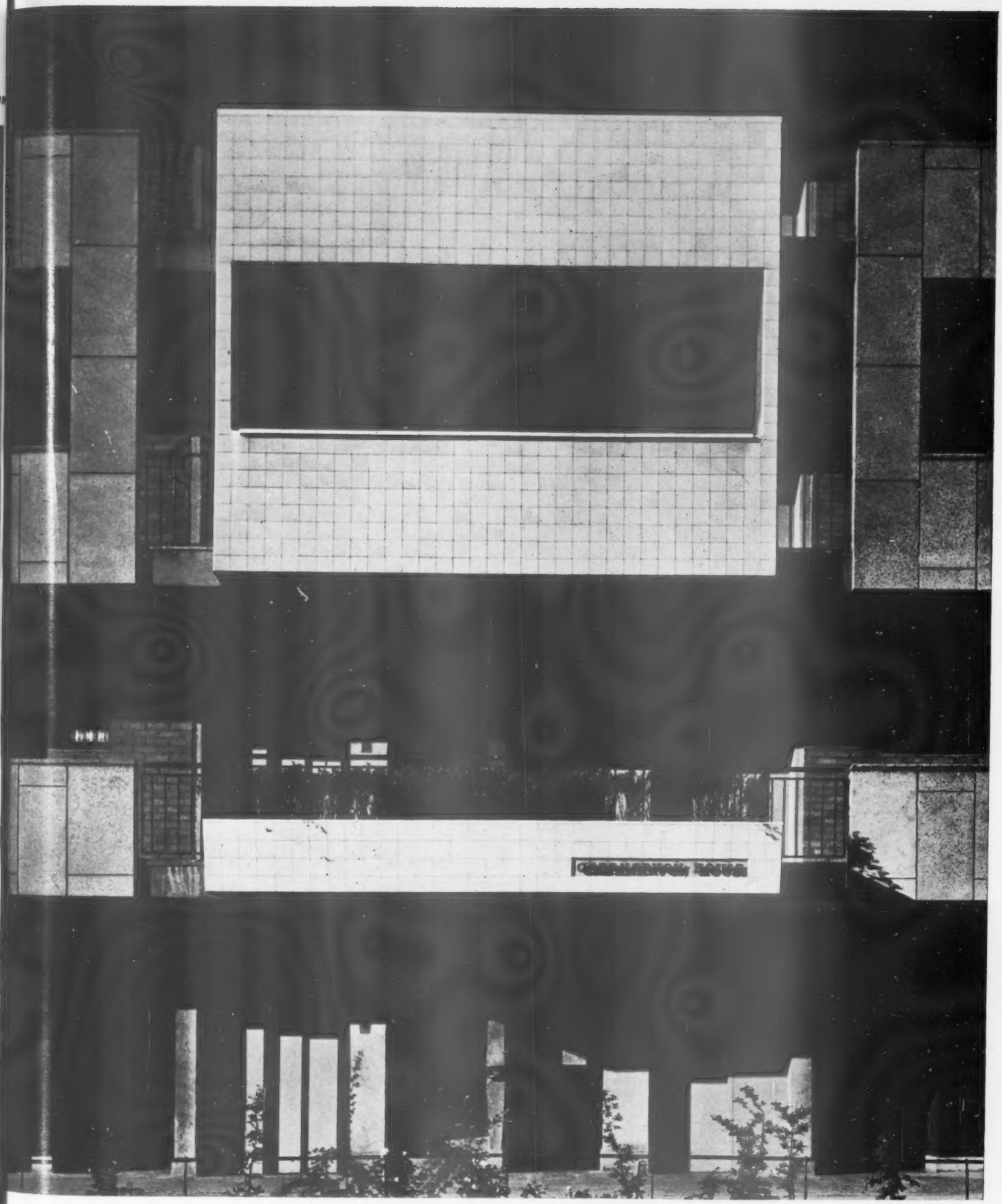


diagram showing the construction of one of the ten-storey blocks

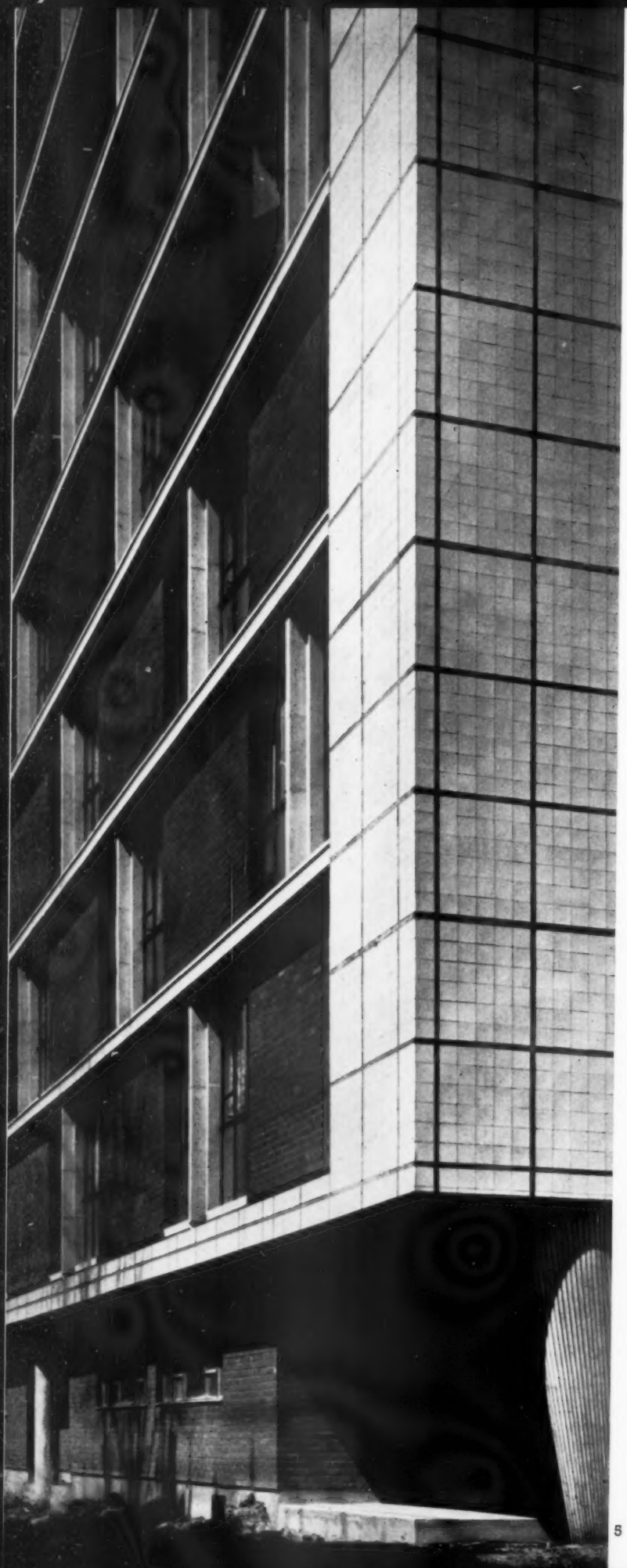
2

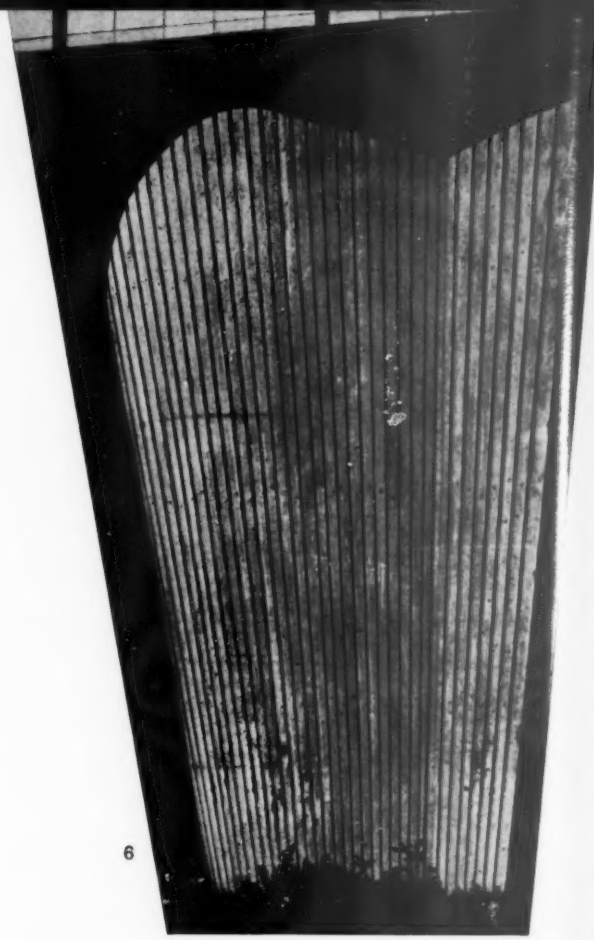
2, view of 10-storey block access gallery. The design seeks to avoid the monotony of unrelieved horizontal galleries. 3, r.c. escape stairs supported on reinforced Staffordshire blue brick pier.

3



4, detail of 10-storey block access gallery—view of stairs and lifts. Photograph shows variations in tone and texture. Materials are cream-coloured ceramic frost-proof tiles applied to concrete walling and precast concrete cladding with grey and white variegated exposed Cornish granite. The cladding is used as permanent shuttering.





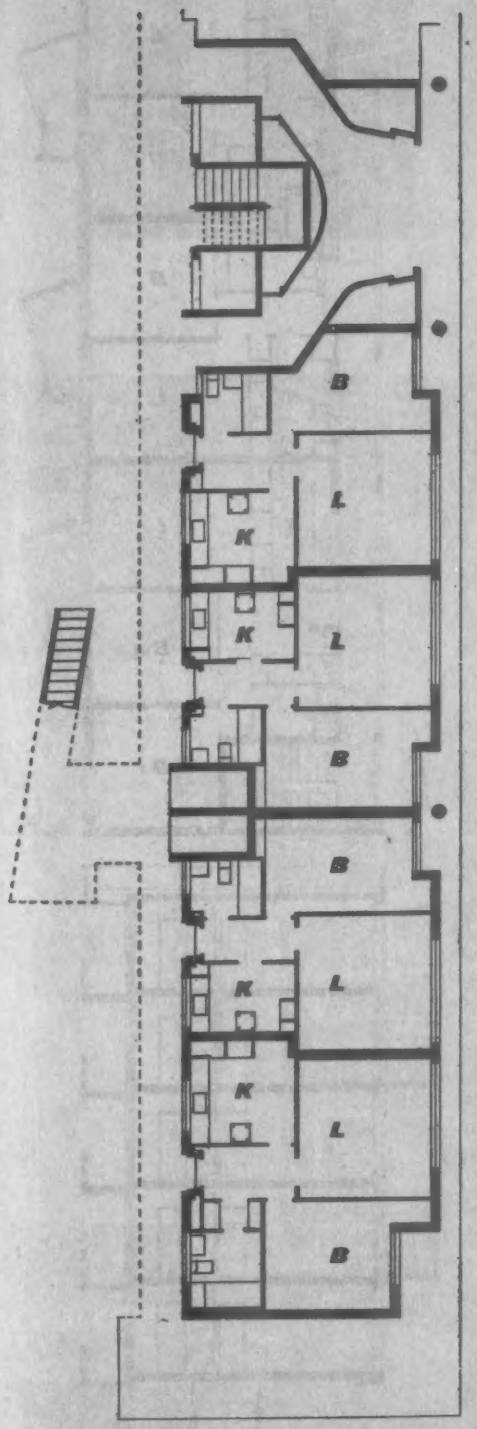
6

5, corner of a 10-storey block showing the patterned tiled framework and precast stone cladding to floor slabs and mullions. The infilling panels are built in dark red concrete bricks and Staffordshire blue engineering blocks on alternate floors. 6, One of the reinforced concrete columns supporting the gable of a 10-storey block. 7, view of the south elevation and gable of a 10-storey block.

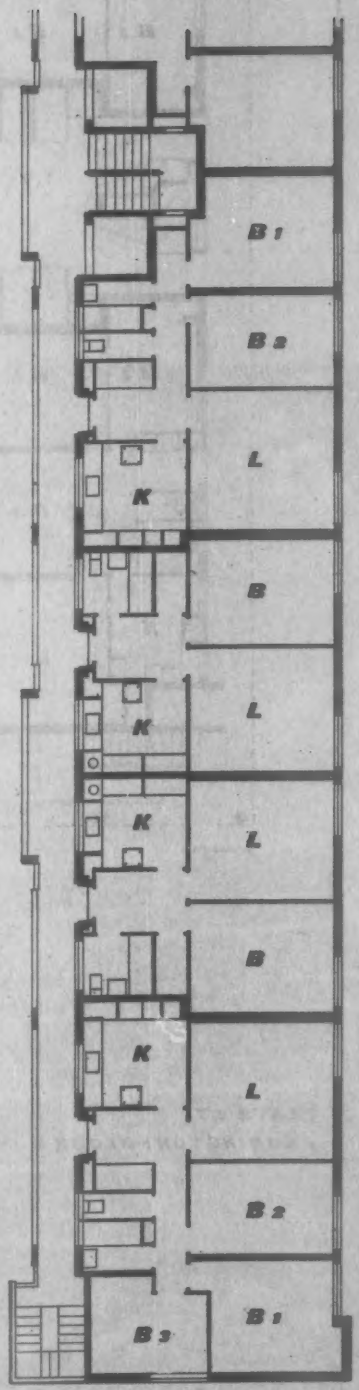
7

5

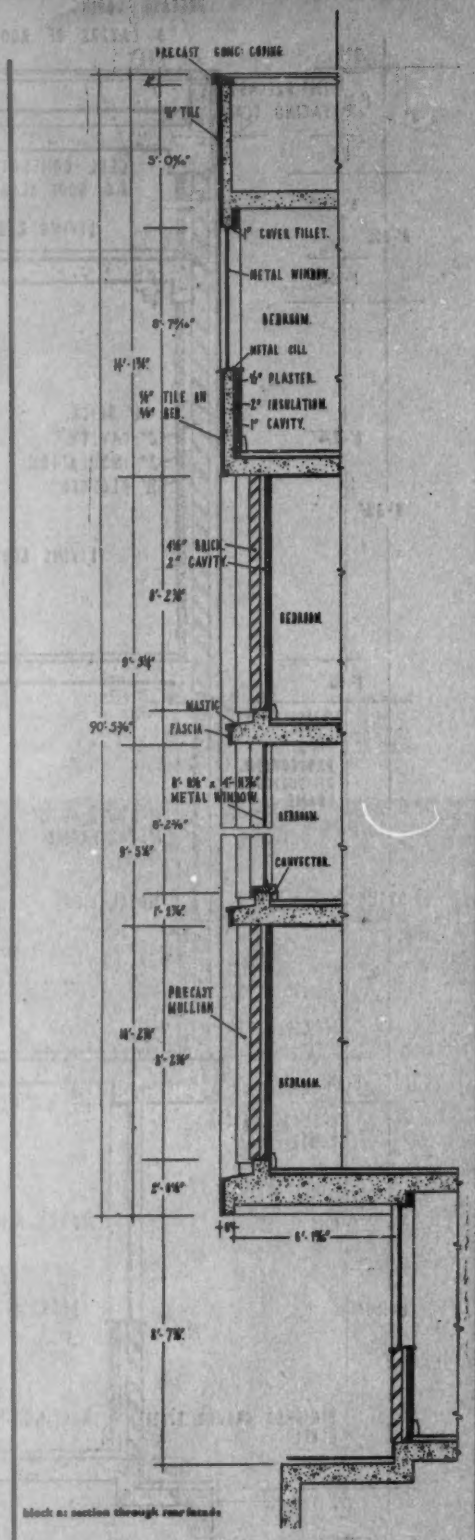
FLATS AT PADDINGTON: BLOCK A (10 STOREY)



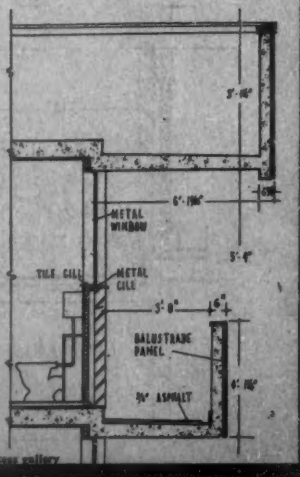
ground floor



typical upper floor

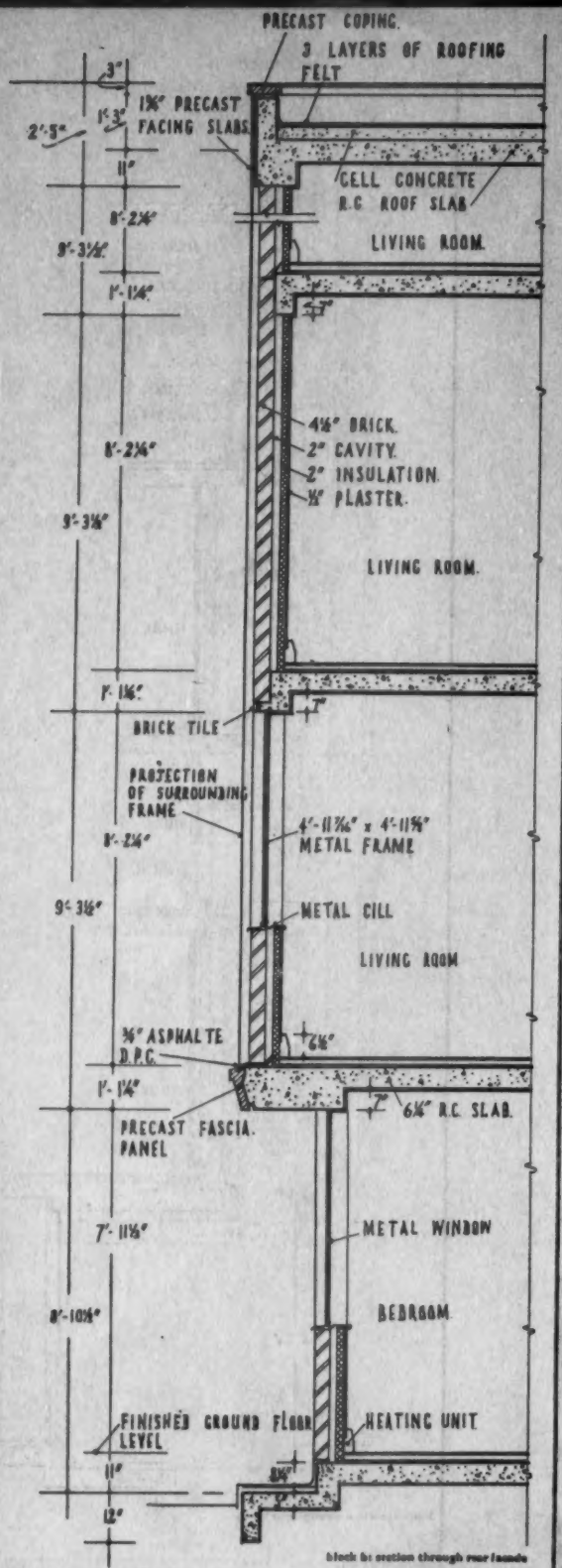


block a: section through rear facade



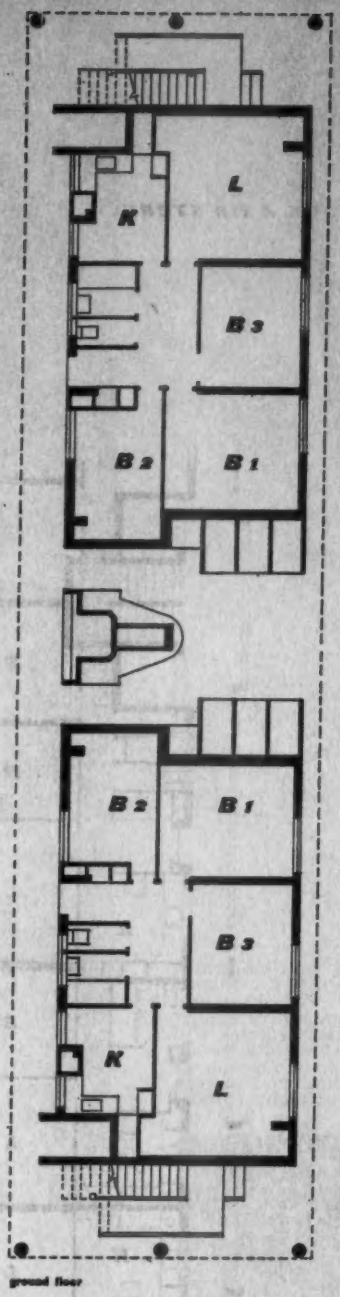
block a: section through access gallery

10 0 10 20 30 40 50 FEET

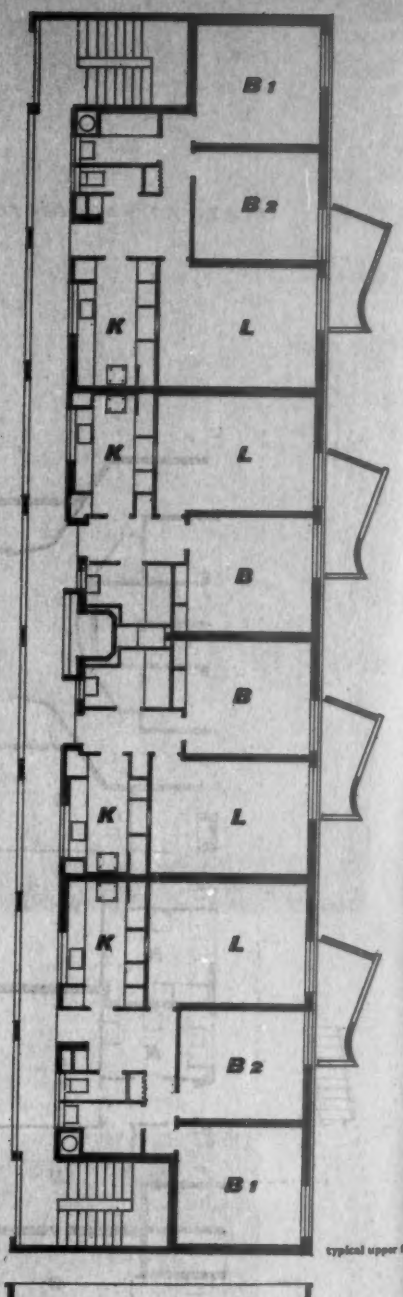


block b: section through rear facade

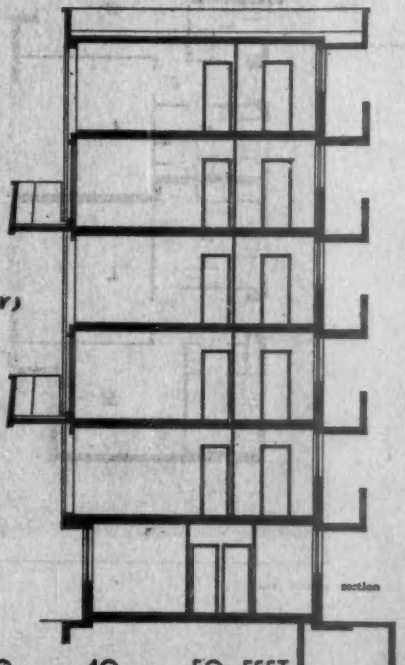
block b: section through access gallery



ground floor



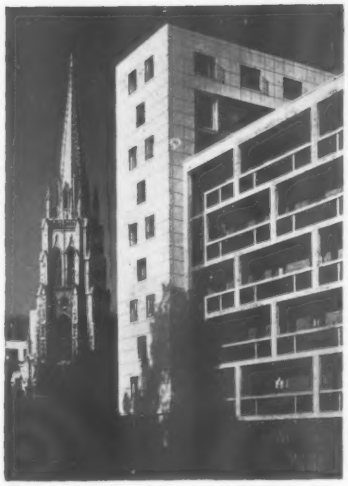
typical upper floor



section

FLATS AT PADDINGTON: BLOCK B (8 STOREY)

10 0 10 20 30 40 50 FEET



8

9

8, Holy Trinity church—outside the north-east boundary of the site. 9, view from north-west showing relationship between 10-storey block of 80 flats and 6-storey block of 22 flats with children's play area in forecourt.

10

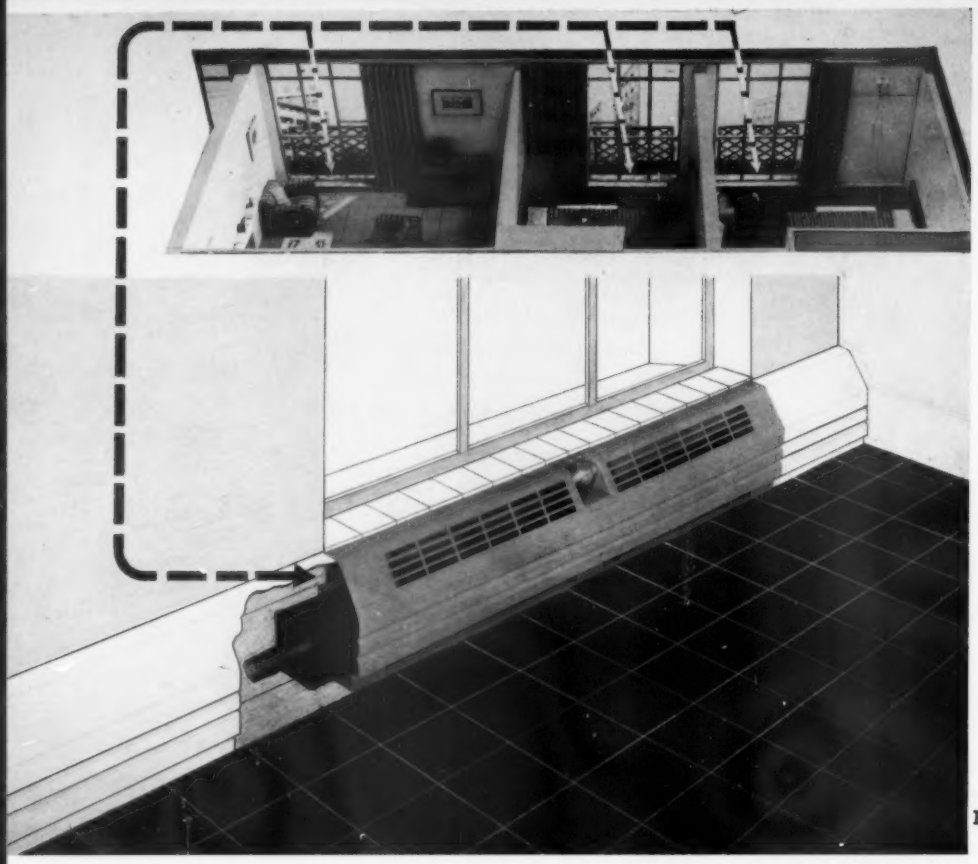
12

11

10, high-level view from a 10-storey block, 11, view between 10-storey and 6-storey blocks as seen from ground level, 12, ground-level view showing the relationship of blocks in the completed courtyard. The grassed courtyard is landscaped with raised earth mounds planted with flowering shrubs. 13, general view into the courtyard. 14, the cantilevered reinforced concrete balconies are spaced to avoid light obstruction to habitable rooms below. They provide by their form strong accents to the elevational treatment. 15, detail of the access gallery elevation to a 6-storey block. The balustrading is perforated in contrast to the solid balustrading of the 10-storey blocks. The infilling consists of precast concrete slabs with a raised polished surface. The slabs are cast with an aggregate of black Cornish granite and black pigment in ordinary cement. Reinforced concrete structural members are clad in precast concrete with Portland stone finish.

13

FLATS AT PADDINGTON

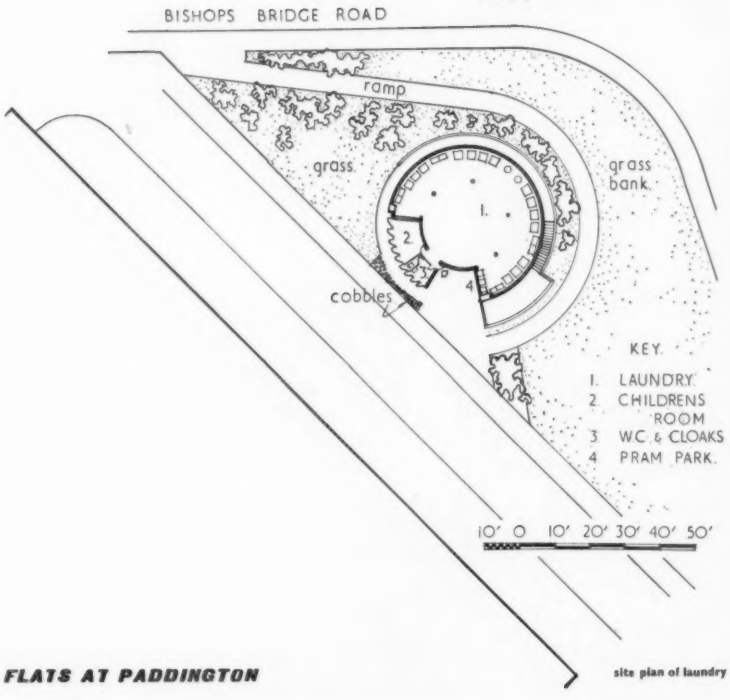


16

16, view of model of 3-room flat showing how heat is supplied to the living rooms and bedrooms through the skirting board convectors. 17, interior view of the laundry which is top lit and equipped with washing machines, hydro-extractor and drying cabinets. 18, exterior view of the laundry showing the approach ramp connecting the site with Bishop's Bridge Road.

17

18



site plan of laundry

FLATS AT PADDINGTON

Pearce Hubbard

MDINA

FORMERLY KNOWN AS CITTÀ NOTABILE THE ANCIENT CAPITAL OF MALTA

'A tiny rock-built citadel
is finer far, if ordered well
than all your frantic Ninevehs.'

Procylides of Leros *trans.* C. M. Bowra

Few other cities of a thousand inhabitants can boast a history so long or an architectural heritage so worthy as that of Citta Notabile, or, as it is today more commonly called, Mdina, the ancient capital of Malta.

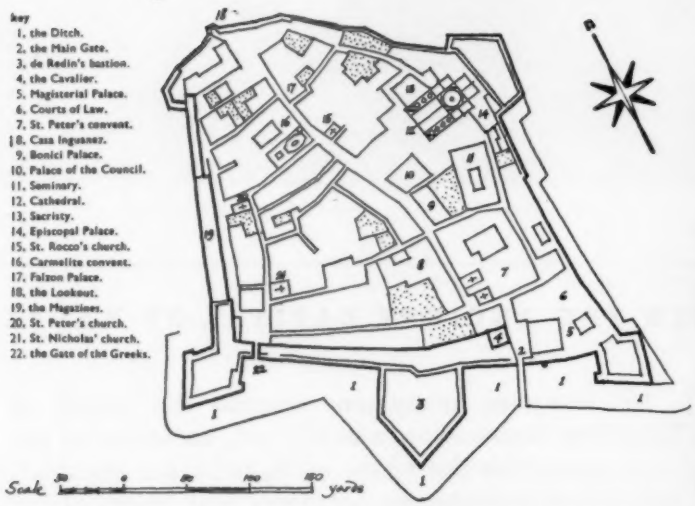
From the earliest days its dominating situation on a rocky escarpment commanding the plain caused it to be regarded as the stronghold of the island. The number of rockcut tombs in the surrounding countryside suggests that already in Phoenician times the city was well established as the capital. During the Roman period Melita, as the city was then called, covered more than twice the area that it does today, for its wide defensive fosse can still be seen in the suburb of Rabat nearly half-a-mile south of the present Ditch. Within its walls the shipwrecked Paul was received and hospitably entertained by Publius the Governor who later became first bishop of the island. Many antique fragments of marble statuary, richly carved capitals and inscriptions unearthed within the city bear witness to the scale and grandeur of the capital at this period, as does the Roman Villa, with its well preserved mosaics, excavated without the wall.

No surviving monument records the period of Byzantine domination, and the only memorial of the Arab occupation during the ninth and tenth centuries, other than polychrome potsherds and fragments of Kufic inscriptions, lies in the present alignment of the Ditch which was excavated in order to reduce the length of wall to be defended by the garrison and proportionately to increase the strength of the citadel called by the Arabs el Medina—the seat of justice.

The city was captured from the infidels in 1090 by Count Roger of Sicily, who rebuilt its cathedral and palaces in the Siculo-Norman style of which Palermo shows such fine examples. It is clear from the surviving buildings and remains of the period that the layout of the streets has changed very little during the intervening centuries. Some idea of the noble architectural character of the Norman city can be gathered from the well preserved façades of the Palaces of Falzon and Gatta-Murino, of which the carefully dressed masonry, the beautifully proportioned pointed arches, the small windows arranged in pairs, the delicate mouldings, imaginatively carved capitals and bold dog-toothed cornices express a well balanced synthesis of strength and refinement. The Norman cathedral, built on an apsidal-basilican plan with a lofty campanile, is depicted in the view of Notabile which appears in the

1

1, an aerial view of the city on its escarpment, showing the walls and bastions built by the Knights of the Order of St. John in the sixteenth century, and the ninth century Arab ditch in front of it.

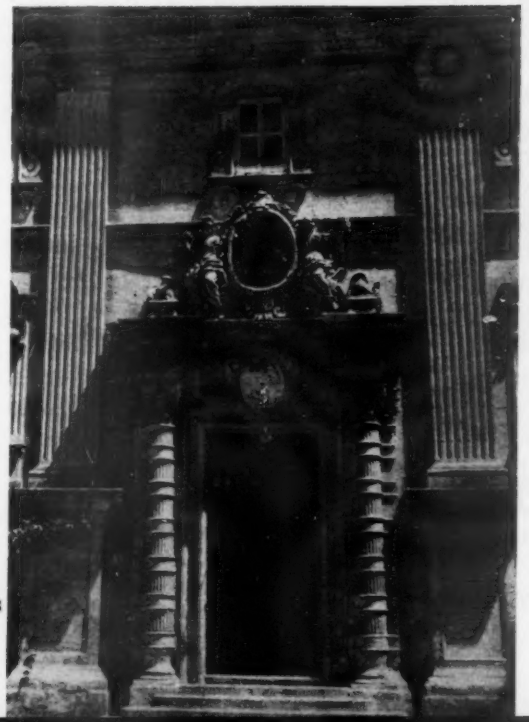


fresco of the Great Siege in the Hall of the Magisterial Palace at Valletta. This building, of which only the carved oak doors and a single capital remain, determined the architectural character of the city until it was destroyed by earthquake in the seventeenth century. In 1432 the city received its distinctive title Notabile from Alfonso V of Aragon who visited the island and confirmed its privileges. During his brief stay he resided at the Casa Inguanez which is to this day one of the most charming palaces of the city.

The termination of the age-old ascendency of the Citta Notabile was foreshadowed when the island was granted, in 1530, by Charles V to the Knights of the Order of St. John of Jerusalem. Grand Master de l'Isle Adam, who had conducted the gallant but unsuccessful defence of Rhodes, is said to have been entertained at the Falzon Palace, while he prepared the survey of his new domain. The fortification of the three cities and the establishment of a strong naval base in the Grand Harbour resulted in the relegation of the inland stronghold to a secondary defensive role. Nevertheless, during the Great Siege of 1565 the garrison conducted itself gallantly and harried the rear of the Turks.

With the foundation of the great new city of Valletta in 1566, Notabile lost its position as administrative capital and commercial centre of the island, but it continued to retain the prestige due to its ancient history and the veneration due to its cathedral built on the traditional site of the house of St. Publius. Throughout the regime of the Order of St. John it was in Notabile that successive Grand Masters 'took possession' of the island at an installation ceremony accompanied by all the splendours of military ceremonial and religious pageantry. The bishop and the nobility retained their palaces in the old city, Citta Vecchia as it now became known, no less to enjoy its cool breezes during the sultry summer months than to maintain the continuity of their established way of life. Nor was residence in the old city without its material advantages for by an interesting Law of Grand Master Martin Gazes (1595–1601) Notabile was declared a sanctuary and residents were free from arrest

2



3

2, the main gate to the city. The gate was moved from the medieval walls to enlarge the courtyard of the palace: the capers which grow profusely on the fortifications are the traditional perquisite of the chief engineer. 3, the courtyard of the Magisterial Palace. Both were built by Grand Master Manoel de Vilhena, 1722–36.

4

5

6

4, Our Lady of Mount Carmel, on the west front of the Carmelite convent: venerated as 'Stella Maris,' the protectress of storm-tossed seamen. The statue is newly painted each spring, and a lamp is lit before it every night. 5, a late Gothic window in the convent wall, and 6, the austere wall of the convent of St. Peter, next to the Magisterial Palace.

for debt for a period of six years, nor might its citizens be tried by any tribunal without its walls. By such means emigration to Valletta was discouraged and land values safeguarded. In 1693 a severe earthquake, which is annually commemorated by a solemn Te Deum, destroyed the Norman cathedral. It was rebuilt within a few years to the design of the Maltese architect Gaffar. The surviving apse of the earlier building was incorporated in the new plan which took the Renaissance form of a Latin cross surmounted by a great dome, the nave being buttressed by domed side aisles terminating with sturdy campaniles flanking the façade, 7. The construction of the cathedral is massive and its scale and proportions dignified. The interior is lavishly embellished with costly marble revetments and sculptured ornament enriched by gilding, while the vaults and domes are covered with frescoes in the southern Baroque manner. Its treasury contains incalculable wealth of vestments, jewellery, brocaded hangings and silver plate including an altar front of such weight that it crushed to death a boy on whom it once accidentally fell.

7, the façade of the Cathedral, designed by Gaffar after the earthquake of 1693. It dominates the piazza which was created a century later as a piece of Napoleonic opening-out.

7

8

8, the neo-Classic Bonici Palace begun at the end of the eighteenth century, its restraint a reaction from the earlier Baroque façades.

Early in the eighteenth century the architectural heritage of the city was further enriched by Grand Master Manoel de Vilhena who erected two new gates, 2, a seminary and the Magisterial Palace, 3, which in the bravura and extravagance of its sculptural detail admirably expresses the courtly life of pleasure led by the knights during this period of peace and prosperity. More serious but none the less magnificent is the Carmelite convent of which the domed church, 9, is built on a highly sophisticated elliptical plan. Before the fall of the knightly regime of the order of St. John in 1798, the seed of western culture planted on the rocky

9

escarpment by the Normans had blossomed into the full blown glory of the Baroque.

But the city of feudal landlords and monsignori was congested, for the ramparts had been built upon and the place d'armes reduced by encroachments, and the cathedral was approached by a narrow alley. It fell to Bonaparte's revolutionaries to reveal the grandeur of Gaffar's masterpiece by the creation of an ample piazza. Vested interests were overruled, a whole block of buildings was demolished and the 'Place de la Revolution' was formed. It was in Notabile that the subsequent revolt against the French flamed up.

Since then there have been few changes. The nineteenth century is marked by the erection of an impertinent little building in whimsical Gothic Revival style which destroys the classical serenity and dignity of the cathedral square. The twentieth century has contributed little more than a few wrought iron lanterns and della Robbia plaques. But the city is well cared for, the narrow shady streets are clean, and the palaces and churches well maintained. Capers and houseleek grow wild on the bastions where the lizards bask undisturbed. Carved lions frown and saints and allegorical figures gesticulate silently in the brilliant sunshine. Rich odours of cookery redolent with oil and garlic emit from the dark doorways in the poorer streets, and the perfume of orange blossom and jasmine drifts over the high garden walls of the rich. The city is pervaded by an atmosphere of detached calm and a quietness which is only broken by the bells in the campaniles which clang out the hours.

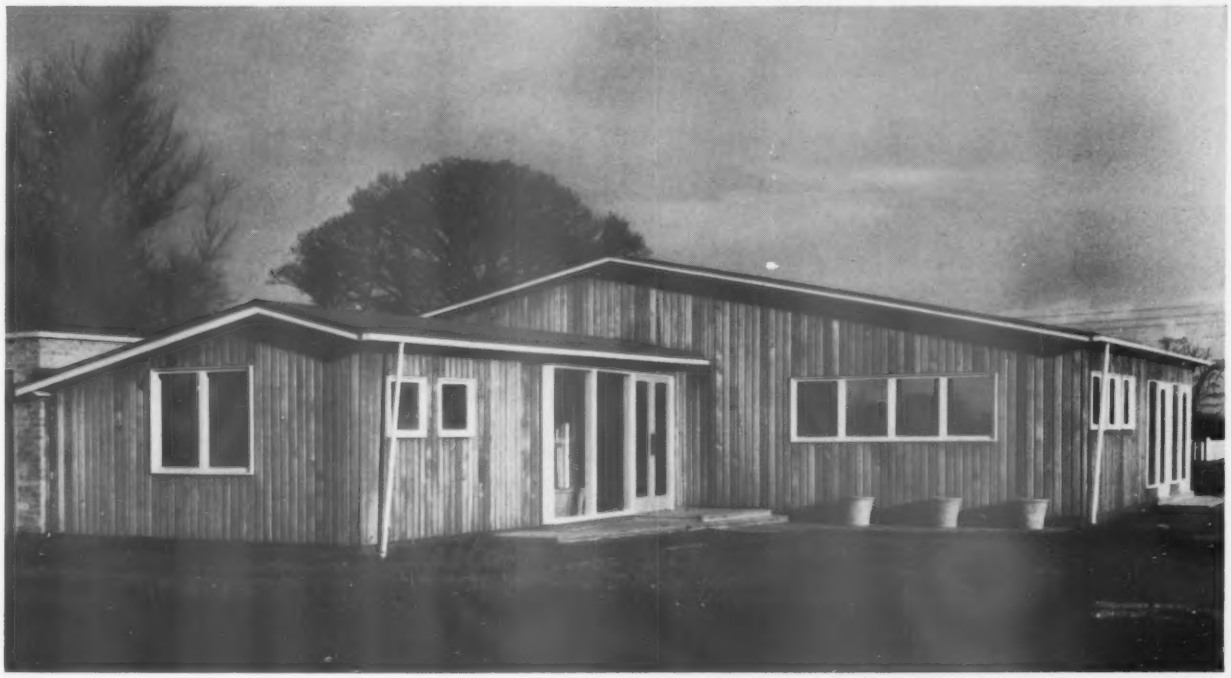
Though the colourful life of the knightly regime has given place to the monochrome of a democratic age the city remains unsoiled by the vulgar commercialism which is so rapidly defacing the monuments and streets of Valletta; but on the feast of St. Paul when the dome of the cathedral, illuminated by the flickering light of a thousand oil lamps, seems to float in the dark heavens, or at the feast of Our Lady of Mount Carmel, when her gorgeously robed and jewelled image is carried in solemn procession through the crowded streets and the city resounds with the ringing of bells and the explosion of fireworks before the statue of Elijah in the cathedral square, the dignified façades of the old palaces seem to glow with a reflection of the spirit that created them.

10

9, the Bonici Palace with the delicate campanile of the Carmelite convent beyond it, showing its success as a foil to the larger buildings, particularly evident when seen together with the Cathedral. 10, *a high-altitude aerial view. The area of the cathedral and piazza gives some idea of the small size of the city as a whole—only five hundred yards across.*

current architecture

recent buildings of interest briefly illustrated.



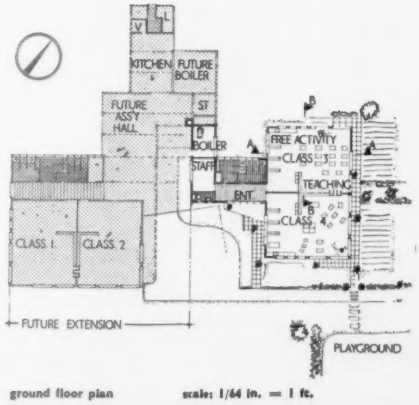
1, *the classroom and entrance from the south.*

VILLAGE SCHOOL AT FORD, SHROPSHIRE

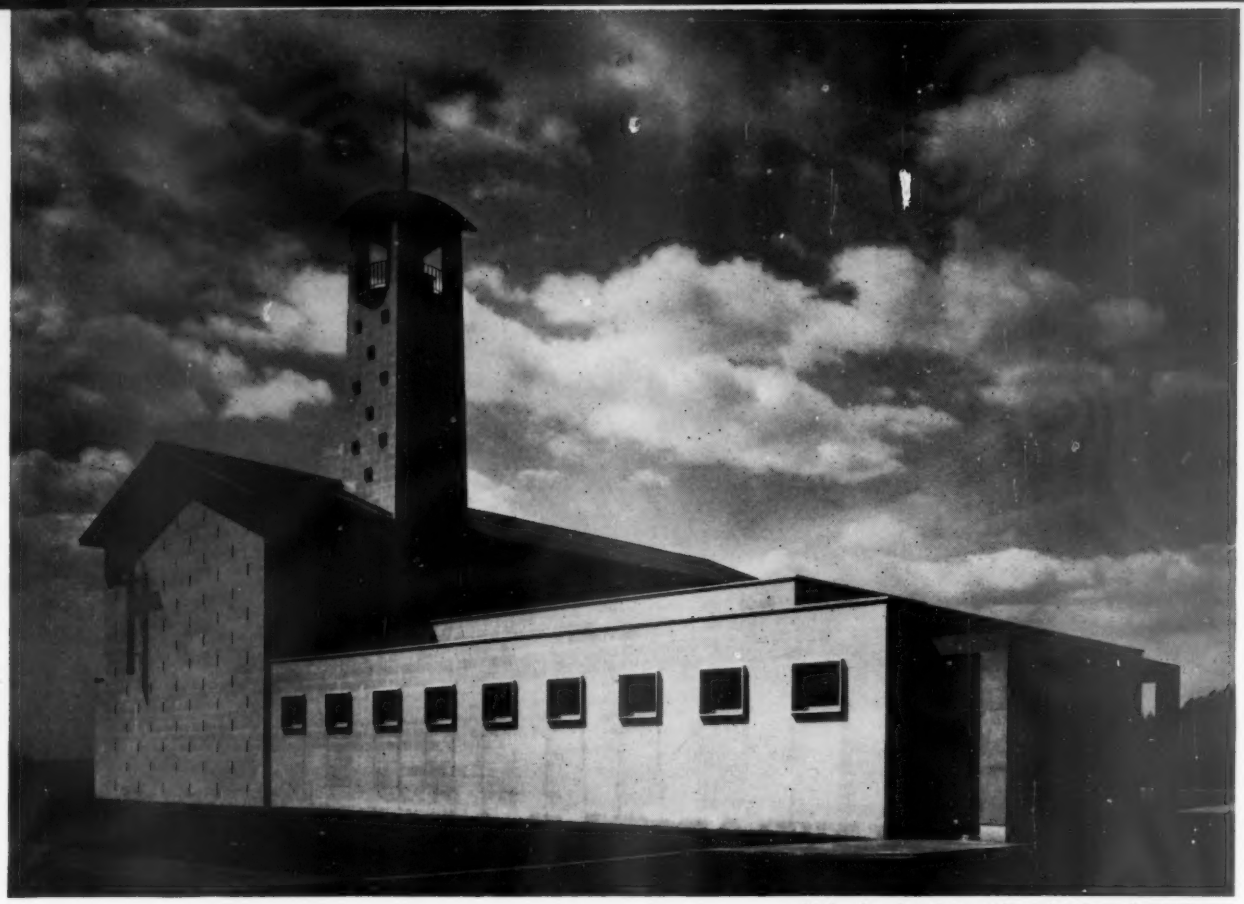
COUNTY ARCHITECT: G. H. SIMMONS

ASSISTANT ARCHITECT: G. CHAMBERLAIN

This is the first part of a primary school at Ford, west of Shrewsbury, near the foot of the Breidden Hills. It replaces a national school built after the 1871 Education Act, and this type will become much more frequent when the backlog of new school construction has been finished. The education authority requested ablution and cloakroom facilities in the classrooms, and the classroom furniture and cloak-racks are designed as separate movable units, which has reduced the circulation space and clarified what was already a simple plan. When the school is completed the present entrance will become a corridor leading to the assembly hall. The construction is cedar clapboard on load-bearing studding, with vertical damp-proof membrane aluminium foil sheeting and fibreboard lining. The roofs use an adaption of the 'punt' system of prefabricated roofing, normally applied to flat roofs to a 12° roof pitch. Inside the ceilings are perforated hardboard, the floor finish dark brown plastic tiles; the cupboard and shelf units are painted in a random scene of primary colours, turquoise and coral.



ground floor plan scale: 1/64 in. = 1 ft.

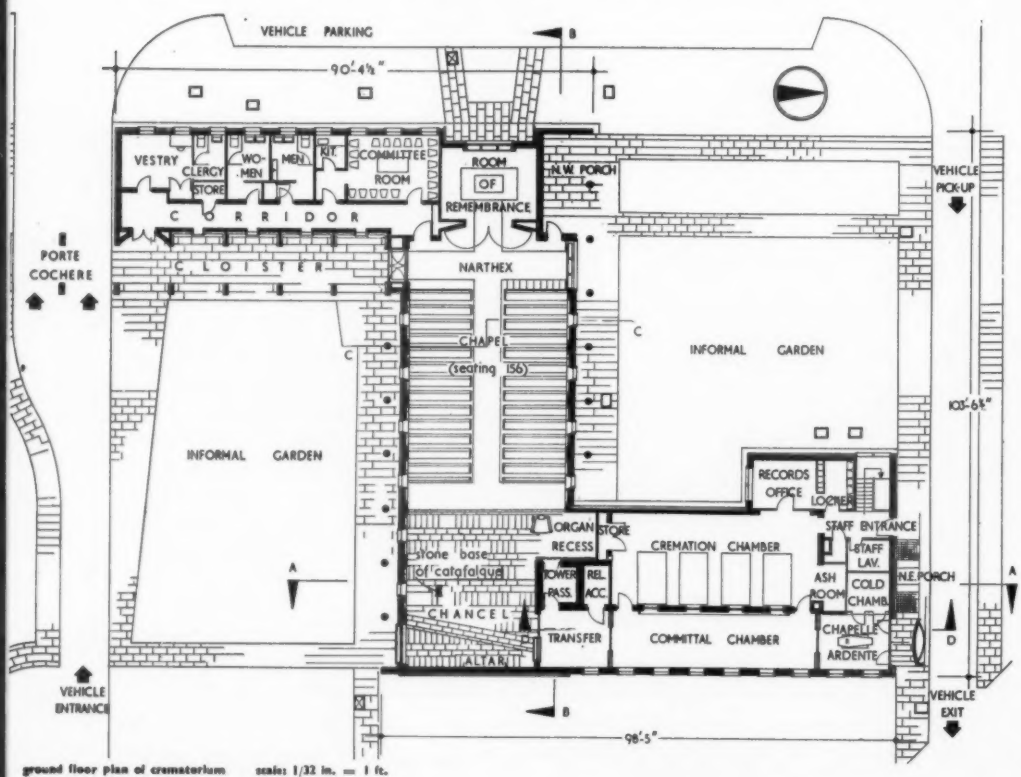


2, the chapel and cremation wing from the north-east.

CEMETERY BUILDINGS AT CARDIFF

CITY SURVEYOR: E. C. ROBERTS

This is a completely new 48-acre site at Thornhill, five miles north of the centre of Cardiff and just outside the city boundary. Three-quarters of the site will be used for burial, and the remaining twelve acres for the crematorium—which is only the second to be built in Wales—and garden of remembrance.



ground floor plan of crematorium scale: 1/32 in. = 1 ft.

Crematorium and Chapel

ASSISTANTS-IN-CHARGE: D. DEVLIN AND J. H. PHILLIPS

The chapel is used for both cremation and burial services, and hence the altar is at the east end and the catafalque is on the south side of the chancel. After the service an electrically-operated curtain screens the chancel from the rest of the chapel, the cross remaining visible through an open screen above the curtain rail. Services may take place at 20-minute intervals, so an effective one-way circulation is obligatory. The way in which this is provided can be seen on the plan, left; mourners enter from the *porte cochère* through the cloisters or the corridor next to it, and leave by the north-west porch, meeting the vehicles at the other side of the informal garden. The vehicle circulation is clockwise and one-way, and includes access to the *chapelle ardente* where corpses are kept before cremation. The construction is load-bearing cavity walls, with 3½-inch Portland stone outer skin and 9-inch brick inner skin; the floors are 8-inch concrete. The roof of the chapel was to have been copper, but shortage of

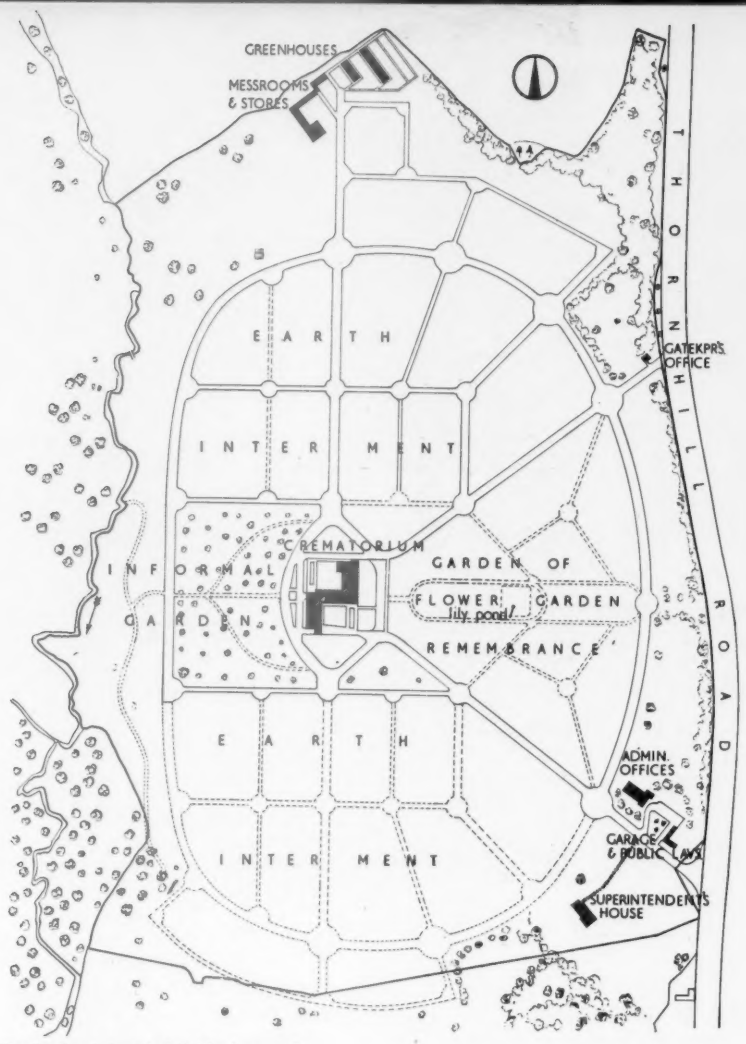
materials compelled the use of bituminous felt, finished green, on diagonal boarding carried by steel trusses and timber purlins and rafters. Flat roofs are precast hollow concrete blocks. The church fittings are in English oak; the floor of the chapel is reconstructed Hoptonwood Stone and that of the chancel natural Ancaster limestone. Smoke emission from the tower during cremations can be observed from the furnace room by a mirror in a hole in the roof, and the gas-air mixture in the furnaces controlled.

3, *entrance to administrative offices.*

Ancillary Buildings

ASSISTANT-IN-CHARGE: W. R. HINDS

These are the mess rooms, gatekeeper's office, administrative office, garage and superintendent's house, a set of straightforward modern buildings designed with the same care as the main block—which is not always the case with big schemes in public offices. They all have load-bearing brick walls and 2-ply built-up roofing on wood joints with 1½-inch wood wool slabs above.



site plan (layout shown in dotted line is proposed)

SHOP IN CANTERBURY

ARCHITECTS: ROBERT PAINE AND PARTNERS

PARTNER-IN-CHARGE: MICHAEL CRUX

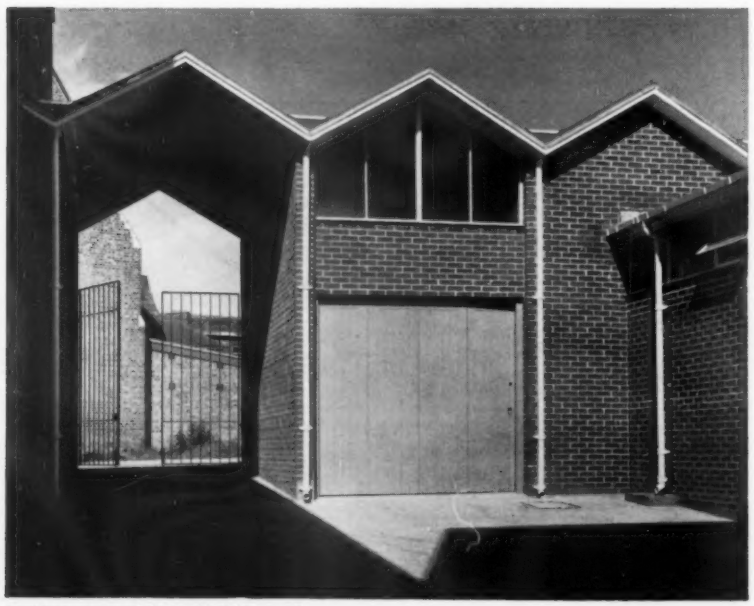
This general provisions shop in St. George's Street is part of the rebuilding of the centre of Canterbury after war damage, and will eventually be seen as one side of a square. The associated cold storage and warehouse space are behind the shop and in the ground floor of the four-storey block which also contains staff rooms, offices and two flats. The shop has a 3-inch reinforced concrete roof spanning between the

4, *the shop at night, with the thistle emblem illuminated.*

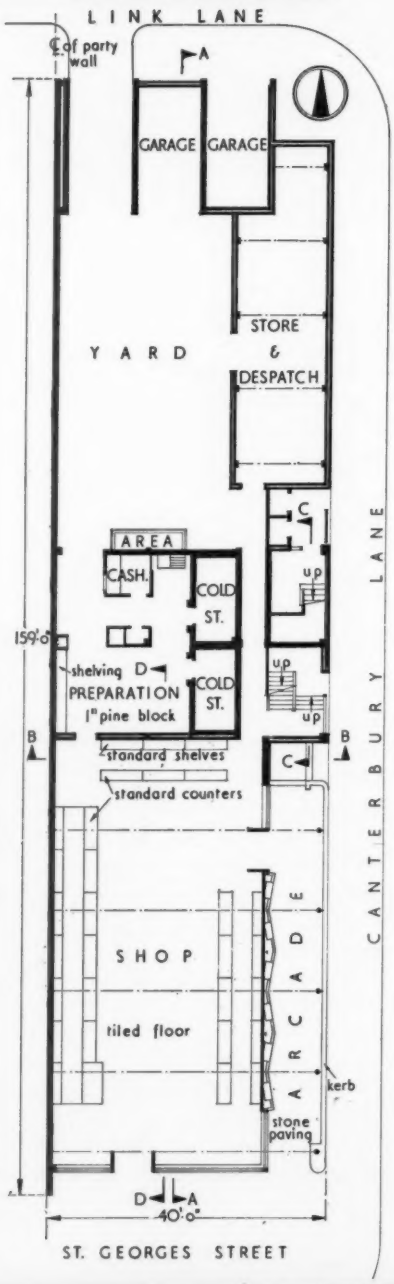
5, the shop from the south-east with the block behind.

Shop in Canterbury

party wall and the circular columns of the arcade; the walls are mainly wood framed glass, and are not load-bearing. The tall block has a reinforced concrete frame and reinforced concrete floors without internal beams, with brick walls and, on the south façade, travertine marble. The warehouse and garages have brick load-bearing walls and reinforced concrete roofs. All facing bricks used are hand-made sand-faced Dorking bricks; the arcade columns are faced with ceramic mosaic and capped with copper, and the visible parts of the shop roof are copper also. The fascia is Westmorland green slate, the separate pieces being the largest ever produced by the quarry; the thistle emblem on the corner is in beaten aluminium from a plaster model by W. C. Day. Inside nearly all the lighting is indirect, reflected into the shop by the corrugated roof from wall fittings. The consulting structural engineers were Ove Arup and Partners.



6, the garages at the end of the yard.



ground floor plan

TOWNSCAPE

TREMADOC

The perpetual tug of war between the opening-up and disintegrating effect of traffic and the need of people in towns for quiet unified enclosures to walk about in is demonstrated in Tremadoc, North Wales. The village of Tremadoc is blessed by having a square in its centre—severely formal even for so small a place yet it carries it off well. The buildings are of rough stone and the place is given its accent by the one-time Market Hall, now a warehouse, which is placed on the axis below steep cliffs. Recently this square has been altered by the rearrangement of pavement and planting of trees, as a glance at the two maps will show. The new arrangement is an improvement since the square is now articulated and has a feeling of enclosure achieved by the simplest, most economical means. For the trees will, when mature, increase the sense of enclosure by providing a roof of foliage. It is also probable that the narrowing of the road junction will clarify traffic to the benefit of residents—a zebra crossing at this point might complete it. Just two little complaints: why have the new paths been laid with crazy paving, and why not project the paths a little farther into the traffic stream? The two sketches on the right, below, show the scene before and in the future when the trees will have matured.

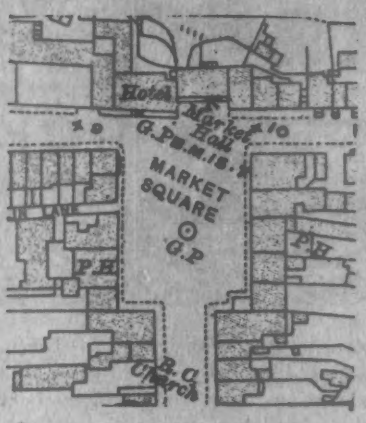
Gordon Cullen

EXHIBITIONS

PAINTING

I used to think that Sunday painters were simple people whose pictures were quaint souvenirs of the commonplace pictures they would have painted if they had been more skilful. I now think that the best of them are deliberate fantasists who create a world of their own out of local views, dreams of a golden age, picture postcards and what they remember of history and geography. The cleverness and highly romantic atmosphere of many of the Sunday paintings

1



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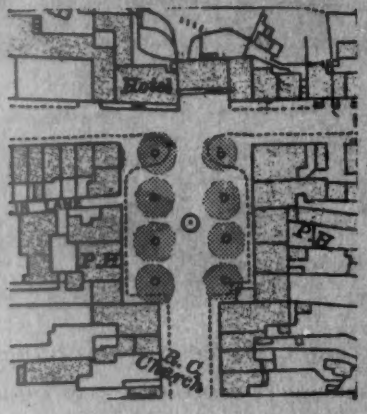

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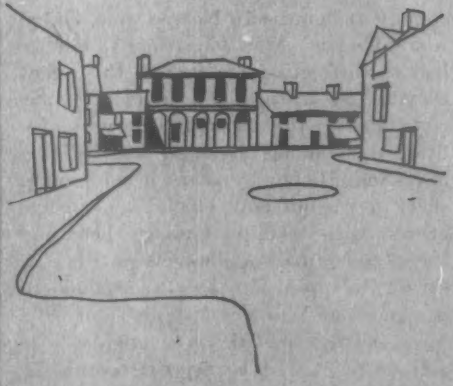

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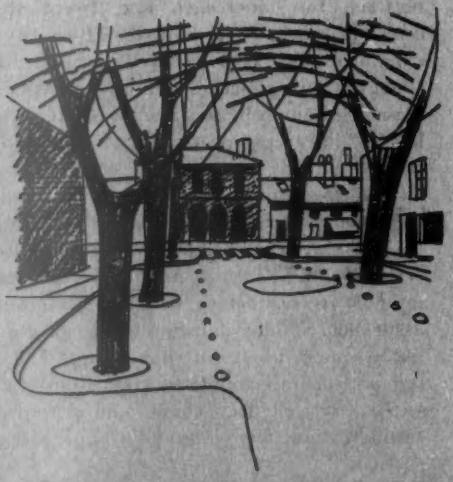

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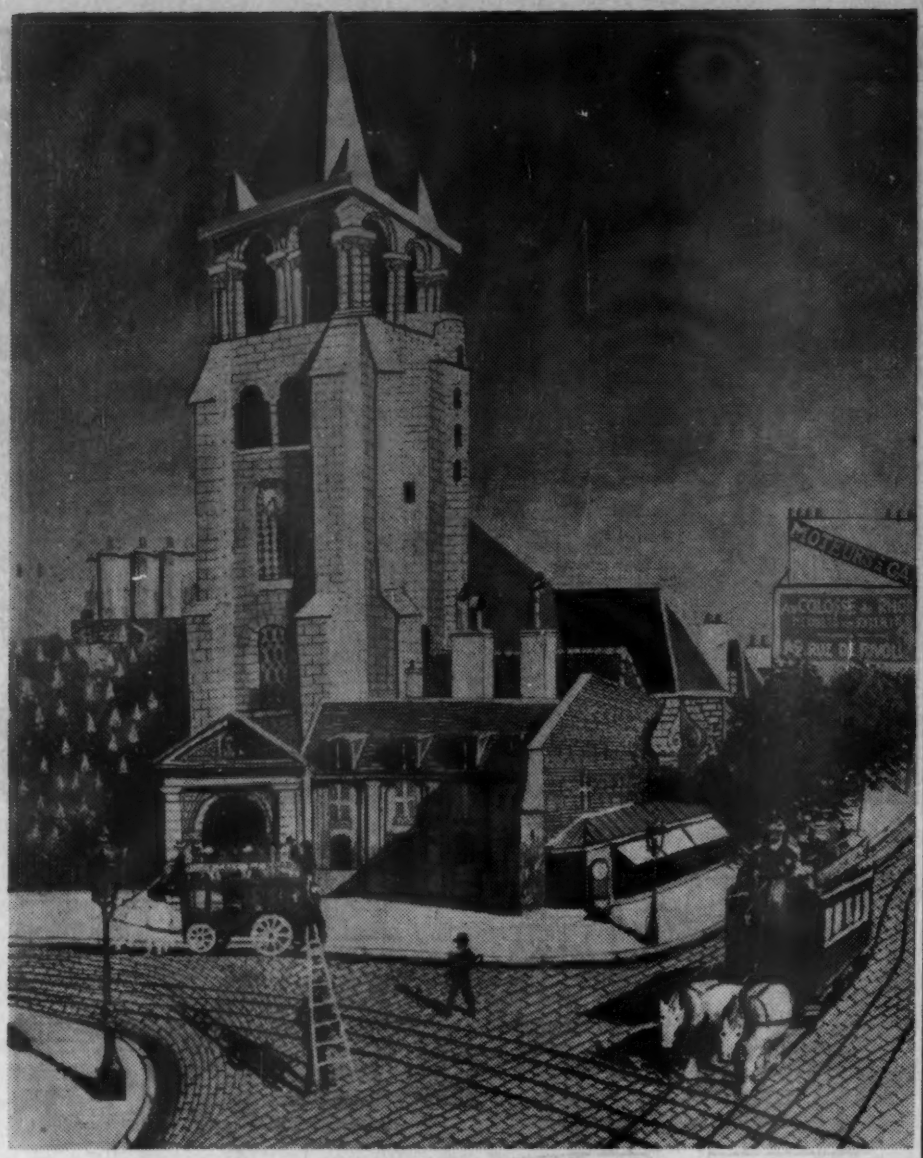
1, *aerial view of Tremadoc showing the newly planted trees.* 2 *and* 4, *map and perspective of the square before alteration;* 3 *and* 5, *the square as it will look when the trees are fully grown.*



1

recently exhibited at the Institute of Contemporary Arts seem to confirm this view. There was a sharp contrast between the nineteenth and twentieth-century work. The nineteenth-century examples were characterized by discreet tonality and a serious effort to render plausible human figures and to master the laws of linear perspective: the account of reality is only slightly off centre. The twentieth-century work, on the other hand, has a self-assertive exuberance. The colour is brilliant, the perspective is wilfully eccentric, and the quite implausible human figures are rendered with preposterous assurance. Sunday painting has become an autonomous mode of beholding. Three soberly daring paintings by Rousseau, with their rich deep colour and powerful formalization, were the points of intersection.

It is often claimed that the Sunday painters of our time are disciples of Rousseau, but those critics who have given the matter most attention agree that the French masters of the *genre* have been quite unaffected by Rousseau or by one another, and it seems more likely that the boldness is a kind of lower middle-class reflection of the colourful inventiveness of the modern movement.

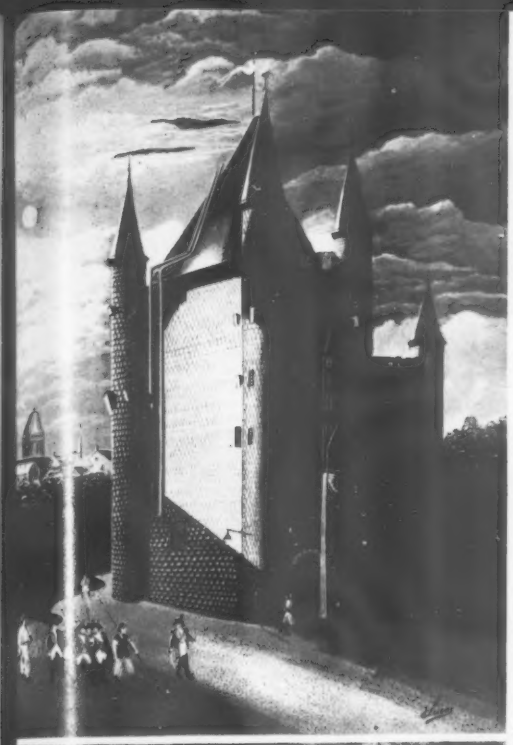
Many of the paintings in the exhibition had architectural themes. Louis Vivin was equally at home with Notre-Dame, Dutch windmills and Venetian palaces, but he had so distinctive a vision of them that they became features of a single imaginary city. Jack Taylor showed two views of a town which he has obviously been building in his mind for many years: it is a kind of shack town, but built of pink and mauve bricks, with triumphal arches here and there, and grandiose viaducts on the outskirts. He appears to have been influenced by American films, and the effect is of a town hastily erected for a gold-rush in archaic times. It is a pity that nothing is known about the artist who painted St. Germain des Près at the turn of the century, 1, for he has managed to give actuality the strangeness of a mirage. The pallor of the tower against the graded green sky, the long cast shadows and the spectral whiteness of the horses foretell the early paintings of Chirico. Jean Lucas, who died in 1941 and has not previously been exhibited in London, usually painted the street and fairground life of Paris, but his sharp, steely picture at the I.C.A. recaptured with admirable simplicity the romantically sinister atmosphere of Baroness Orczy's French Revolution, 2.

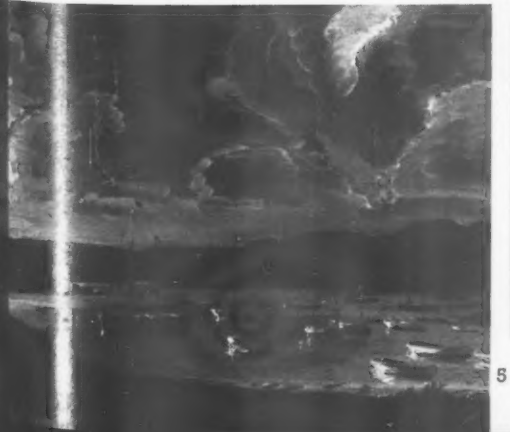
The I.C.A. opened its first big autumn show unusually early, and this note was written when some of the mixed summer exhibitions still had a few more days to run. Only the Redfern had hung its first one-man shows of the new season. It opened with a quiet, distinguished selection of paintings by Christopher Wood, and recent work by Paul Feiler. Feiler paints beautifully, but the echoes of de Staël are not diminished by a new and delightful brilliance of colour. There are echoes of several Parisian painters in Christopher Wood's portraits, but the exhibition included several of the landscapes and interiors he painted at Tréboul, and they are among his loveliest works. A painting of a Roman square lacked the free brushwork of the Tréboul canvases, but a drawing of the same subject, 3, has light and space and infinite charm.

Other galleries were showing some of their small treasures. At Reid and Lefevre one could see a fine winter scene by Chapelain-Midy, 4, with exquisite passages of white on white; at the Mayor Gallery a voluptuous Matta of oncoming cloudy grey shapes slashed to show the tatters of a crimson lining; at Roland, Browse and Delbanco, William Nicholson's lovely little picture of calm water and turbulent sky, 5.

Several exhibitions of students' work were open to the public during the summer, and there was a notably high standard of presentation. At the A.A. in particular, a complex mass of material was set out with remarkable clarity, and if I say of the free-hand drawings I saw there that I was rather more taken by the jubilant rawness of some of the first-year efforts than by the sophisticated stylization of the fifth-year work, it casts no reflection upon the hard work and imaginative effort put into the projects themselves. At the art schools there were few signs of interest in architectural subjects for their own sake, although there was much good life drawing. At one of the smaller schools, Woolwich Polytechnic, I found what seemed to me to be a nice example of perspective drawing, 6, an objective study rendered with an unassuming liveliness of line. One cannot dawdle about in the picture-space, as one can in Christopher Wood's masterly drawing; in fact, one is frog-marched relentlessly up the street, but the student who made it is perhaps at the stage where expressive drawing begins.

Robert Melville





2, by Jean Lucas at the I.C.A. 3, by Christopher Wood at the Redfern. 4, by Chapelain-Midy at Reid and Lefevre. 5, by William Nicholson at Roland's. 6, in an exhibition at Woolwich Polytechnic.

6

LANDSCAPE

NEW TREES IN THE COUNTRYSIDE

One of the factors influencing the changing English landscape is the introduction of trees which are not indigenous to the country. Some changes are unavoidable, as in the case of timber crops, and can sometimes be accepted and harmonized with the landscape. But the greater disharmonies are the result of planting which is intended for beauty alone, and are due to a failure to see the whole of a landscape as one picture, to which the parts must be subordinate.

To demand the exclusion from the countryside of all hybrids and foreign species is neither desirable nor historically sound. Three of our noblest trees, the sweet chestnut, the horse chestnut, 1, and the

1

sycamore, are all introductions and are accepted as a natural part of the English countryside. So now is the larch, although when first introduced, it was attacked as vigorously by Wordsworth and Uvedale Price, as we now attack the spruce.

Whether or not an introduced plant disrupts the harmony of a landscape depends less on its intrinsic merit than on its congruity.

Plants may be incongruous for three reasons:

(*a*) They may jar psychologically by showing too obviously the hand of man in a landscape where we wish to be as near nature as possible. Any garden or exotic plants in otherwise wild scenery fall into this category, so does any planting which

2

smacks of the urban park in a rural landscape. Thuja, spaced out in the foreground of a natural oak forest reduces the scene to suburbia, 2.

(*b*) Or they may be incongruous because in form, 3, colour or scale they do not

3

accord with their surroundings. Bright pink cherries and purple leaved plums are inharmonious set in an English Spring landscape of light greens and white blossom. Fastigiate Hornbeams, 4, and upright and weeping cherries are out of

4

harmony with the sweeping curves of a Chiltern landscape whose natural tree is the flowing, rounded, beech.

(*c*) Incongruity may lie more with

5

6

7

grouping and distribution than with the plant itself.

Nature never spots her plants, but develops them in colonies and intermingling groups. Even in deciduous forest, Douglas fir, grouped naturally with the native trees, 5, do not look out of place. In the Thames-side scenery at Henley, the fastigiate Lombardy poplars and the drooping weep willows (both introduced trees) make an acceptable part of the scene when grouped naturally together, 6, but not when they are spaced out alternately in an unrelated row, 7.

Sylvia Crowe

ARCHITECTURE

LUNETTES

In an article on Auguste Perret which appeared in the August 1953 *issue of the* REVIEW, *attention was drawn to his use of architectural forms which in concrete are structural although they were used in the* 18*th century as purely decorative treatments of stone. A similar example of the adaptation of traditional forms to concrete design is to be found in the vaulting of Denis Honegger's new church of Christ the King, now nearing completion in Fribourg, Switzerland.* The composition of this church, which is entirely of reinforced concrete, consists of a wedge-shaped nave (with aisles) terminating in a circular sanctuary, the whole enveloped by an ambulatory. The roof of the nave is a funnel-shaped shell vault, widening from a three-dimensional parabolic arch at the sanctuary to a three-dimensional segment of a circle at the West end. These arches are termed 'three dimensional' since they are curved on plan, 6. The aisles are roofed by shell barrel vaults which penetrate the nave vault tangentially on curved beams, 4.

As will be seen from 6, the lunettes of the circular sanctuary are crowned by a drum surmounted by a dome. Since the curve of the drum is not concentric with the curve of the ambulatory, the web which joins the beam of the drum to the beam of the ambulatory had necessarily to be of complex shape, a shape made more complicated by the penetration of the sanctuary lunettes. It was decided to make the profile of the web joining the two beams a parabola, which varies in curve; the maximum horizontal axis of the parabola is at the chancel arch, 1, the minimum is at the East end, 5, that is to say on the termination of the long axis of the church.

1

Shell barrel vaults are normally used to take full advantage of the large spans permissible with this form of construction, and it is unusual to see this concrete form disciplined and restricted for aesthetic reasons. Honegger's development of the lunette in this way has a particular interest in that although semi-circular windows were used during the classical period in the church of the Val-de-Grâce in Paris, 2, the example of this church was not widely

2

followed until large lunettes, copied from Roman thermae, were used at the end of the eighteenth century; for example, by Soufflot at the Panthéon, and by Contant d'Ivry at the Abbaye de Pentémont, both in Paris.

The sculptural decoration of the nave barrel vault of the Val-de-Grâce was executed by Michel Anguier from 1655 to 1665 and shows the influence of Maderna's vaulting of the nave of St. Peter's, Rome. Yet whereas in Rome windows with vertical jambs were inserted into the lunettes, here a semi-circular window occupies the entire space.

The church of the Val-de-Grâce was originally designed by François Mansart, but when it was half built he was replaced as architect by Lemercier, who was in turn succeeded by Le Muet and Le Duc. There is evidence to show that François Mansart consoled himself for his dismissal by building the chapel of the chateau of Fresnes in the way he intended to complete the Val-

3

de-Grâce, and as at Fresnes both the small lunettes of the nave and the large lunettes of the transepts are filled with the traditional vertical-sided windows, it may be supposed that the lunettes of the Val-de-Grâce were designed by Le Muet, who was architect in charge from 1654 to 1666.

The large transept windows of the Val-de-Grâce, 3, are also composed of a semi-

4 | 5 | 6 *Three views of Honegger's church at Fribourg, Switzerland.* **4**, *looking into the nave from one of the barrel vaulted aisle bays.* **5**, *looking upward from the east end.* **6**, *the church from the west end.*

circular window completely filling the opening. Here the subtlety of the interpenetration of three-dimensional curves is even more marked, and one may notice in particular the transition from the curved

7

plane of the window, which follows that of the cornice, to the flat plane of the arch intersecting the half dome.

When Jules Hardouin-Mansart built the church of the Invalides, 7, in 1680 he adopted apsidal terminations similar to those of the Val-de-Grâce, but reverted to the system of inserting windows with vertical jambs into the lunettes. There are at least two possible explanations of this. Firstly, it may have been done to obtain uniformity in the exterior façades, as originally there was a window (now blocked) in the rear wall of the apse, which was the same width as the window of the lunette, 8. The second and more likely explanation is that this form of lunette window occurs in François Mansart's

8

design for a Bourbon Funerary Chapel at St. Denis, and it is well known that his great-nephew modelled the church of the Invalides on these drawings.

Peter Collins

ART IN USE

INHABITED SCULPTURE

The most elementary definition of the three major arts is that painting is in two dimensions, sculpture in three dimensions and valid only as volume, architecture in three dimensions and valid both as volume and space. Giuseppe Maria Crespi, known as Il Cerano, in 1624 designed a colossal statue of St. Charles Borromeo at Arona on Lago Maggiore. Like the Statue of Liberty and the beery Bavaria at Munich, it is hollow and accessible inside by means of staircases and ladders. But that seems only a parasitical activity and does not convert them into architecture. However, the artist of the postcard from which

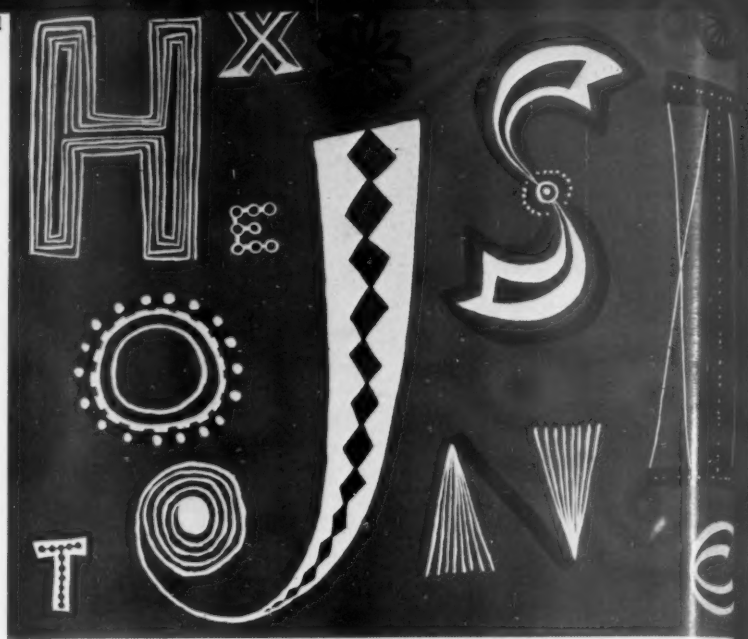
art in use:
inhabited sculpture

the illustration above comes has, as successfully as any Max Ernst, confused the realms of the two arts and our simple definition. The brick house swarming with little people as if taken out of an Italian film of life amongst the less fortunate classes goes on behind the sheathing of bronze. And the set face of the great saint and his tender gesture of blessing appear superbly superior to these small lives. The postcard notes in French and Italian:

circumference of head 6.20 metres.
length of face 2.40
length of nose 0.85
length of ear 0.75
length of eyes 0.50
length of mouth 0.75
length of arm 9.10
height of breviary 4.20
width of hand 1.45
length of thumb 1.40
circumference of thumb 1.0
length of forefinger 1.95.

There could be no more graphic way to impress real greatness on the purchasers of coloured postcards. **N.P.**

1



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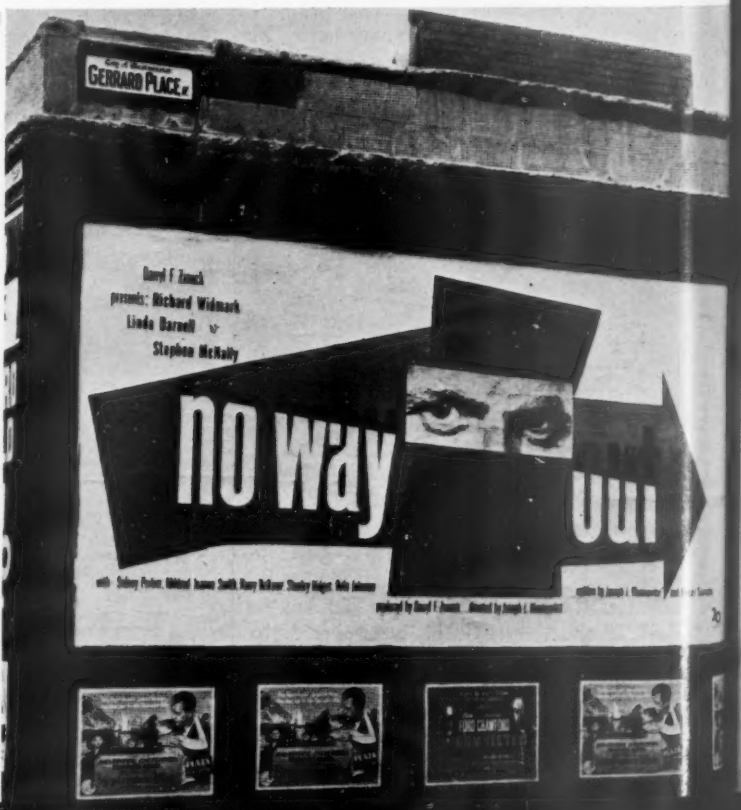


BETTER LETTERS

LETTERING ART IN MODERN USE. *By Raymond A. Ballinger. Reinhold Publishing Corporation.* $12.00.

Although the title of this book mentions modern use, almost half of the examples shown are period type faces going back to the seventeenth century. The book gives such an excellent choice of lettering, so carefully and lovingly compiled, that nobody who is interested could afford not to possess and use it: American industrial designers for instance. The lettering on transatlantic refrigerators, washing machines and motor cars is almost universally bad. Whilst designers and engineers are gradually overcoming the worst excesses of styling, they seem to have left lettering in a particularly low spot. In fact, the elongated script of logotypes and the dials on dash-boards have created a new type of borax which is far below the standard of the designs to which it is applied. I sincerely hope that Mr. Ballinger's book will be read by these guilty men. **F. H. K. Henrion**

PIONEERS AND PRECURSORS

THE ARCHITECTURE OF THE SOUTHWEST: INDIAN, SPANISH, AMERICAN. *By Trent E. Sanford. Allen & Unwin Ltd.* 42*s*.

THE DWELLINGS OF COLONIAL AMERICA. *By Thomas Tileston Waterman. University of North Carolina Press (London: Geoffrey Cumberlege).* 80*s*.

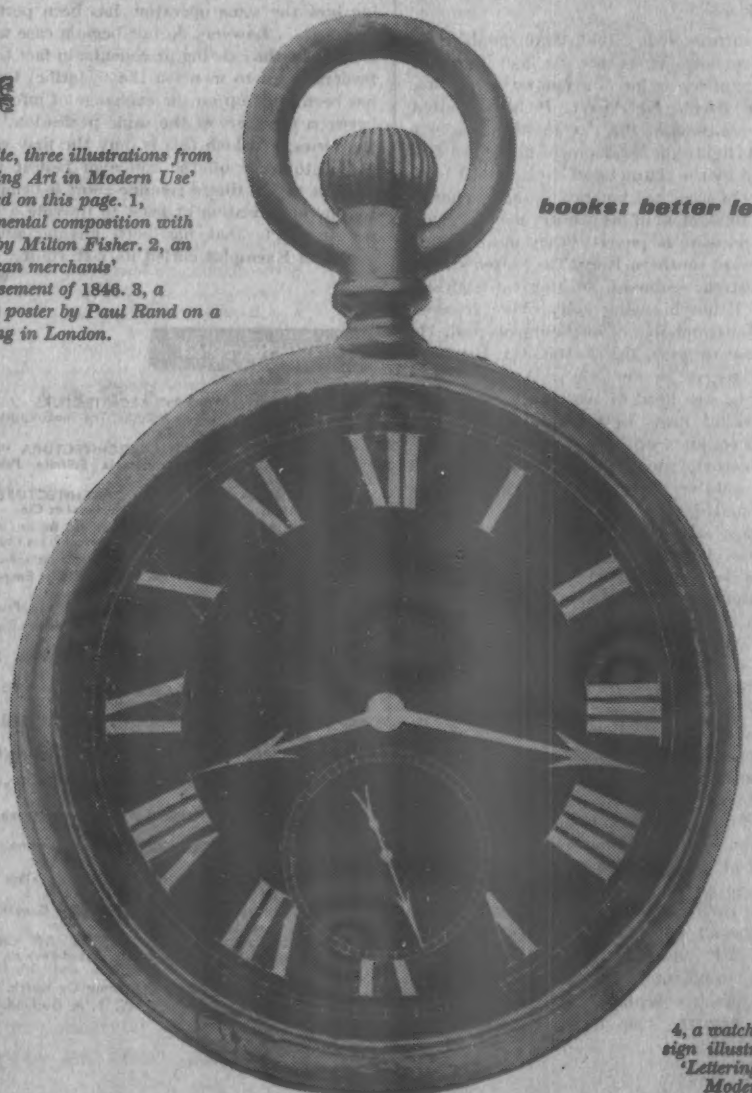
WILLIAM STRICKLAND: ARCHITECT AND ENGINEER. *By Agnes Addison Gilchrist. University of Pennsylvania Press (London: Geoffrey Cumberlege).* 80*s*.

Of these three books from America, the first covers most in both space and time. Mr. Sanford is a practising architect, with an uncommon gift for lively descriptive writing; his is a travel-book with architecture as its central theme. He surveys the architecture of the four enormous states of Texas, New Mexico, Arizona and California—the four states touching the Mexican border. He goes back to the Indian culture whose 'classic' period was in the eleventh to thirteenth centuries, and who left behind them (already deserted and ruined long before the Spaniards arrived) the spectacular cliff villages of the Mesa Verde National Park. The middle part of Mr. Sanford's book deals with the architecture following the Spanish conquest and especially the missionary enterprises following the foundation of Santa Fe in 1609. He continues with an account of the penetration of the raggle-taggle Western styles in the nineteenth century; and concludes with a chapter entitled Renaissance, which covers, among other things, the 'Spanish' revival whose peak was in 1925, which recrossed the Atlantic and may still be encountered in the nastier restaurants of London and the provinces. Mr. Sanford remains as readable and as interesting at the end of his breathless story as he was at the beginning. This is a delightful book.

The late Mr. Thomas Tileston Waterman's book on the houses of the American colonies is similar in character and intention to his book on Virginian mansions published in 1945. Indeed, the section dealing with Virginia is necessarily in part a précis of this earlier work. On this reduced scale he deals not only with the south but with the Delaware Valley, Pennsylvania, the Hudson Valley, eastern New Jersey and New England. This has meant the study of many early influences other than those of seventeenth and eighteenth century Britain, notably French in S. Carolina, Swedish on the Delaware and Dutch in the Hudson Valley. The author's references to European prototypes are apt to be somewhat laboured, but the survey as a whole is valuable, while the photographs and plans are excellent.

Lastly, we have Miss Gilchrist's careful study of William Strickland. Like Robert Mills, Strickland was a pupil of Benjamin Latrobe and carried the Latrobe idea of an American classicism well into the nineteenth century. His Tennessee State Capitol at Nashville of 1845–59 is in direct descent from Latrobe's Philadelphia Bank of 1798–9. His work has that combination of austere pedantry and extreme coarseness which characterises all Greek Revival buildings outside (and even some inside) the main centres of the movement. In the American scene, Strickland has a pioneering importance and Miss Gilchrist does him full justice with her crisp recital of his life and admirably thorough documentation. **John Summerson**

Opposite, three illustrations from 'Lettering Art in Modern Use' reviewed on this page. 1, experimental composition with letters by Milton Fisher. 2, an American merchants' advertisement of 1846. *3, a cinema poster by Paul Rand on a hoarding in London.*



4, a watchmaker's sign illustrated in 'Lettering Art in Modern Use'.

DESIGNED TO SELL

THE MODERN SHOP. *By Bryan and Norman Westwood. The Architectural Press.* 30*s*.

We have seen very few new shops in England since the war; largely due perhaps to economic restrictions and many of those that have been built have had to keep to a low budget, but these facts cannot excuse the general lack of distinction. In Italy and other countries one can find modern shops of high distinction, in spite of the fact that restrictions on budget and materials were quite as severe. Who is to blame? The designer or the shopkeeper? Undoubtedly both, but until the shopkeeper is prepared to take a risk in buying design as he does in buying stock, the results will inevitably remain mediocre. Where shopkeepers have been enterprising (and it is surely commercial suicide not to be) the results have been shown to pay. Mr. V. C. Morris, whose San Francisco Gift Shop (by Frank Lloyd

Wright) is one of the better examples shown in '*The Modern Shop*,' has stated that when he decided to ask Mr. Wright to re-design his shop, he expected to have to change radically some of his basic selling methods. Although he was not so much concerned with commercial success (he had already achieved that) as with creating a distinguished background, in fact he finds that his sales have doubled themselves.

Although many of the illustrations appeared in the Westwoods' earlier book (*Smaller Retail Shops*, 1937), and although no modern Italian shop is shown, this book covers a wide range of subjects and contains, in addition to the many shops illustrated, useful information on such matters as Siting, Fittings, Finishes, Heating, cost and types of materials. Much of this, though available in more detail in trade catalogues, will—being under one cover—be of use to 'enterprising shopkeepers who appreciate the value, in a competitive world, of good shop design.' The basic lesson is that commercial design reflects the chaos or orderliness of contemporary society. And until architects and town-planners can successfully show the way in this age (as it was shown instinctively in the eighteenth and early nineteenth century urban scene), bad taste, vulgarity and lowering of all standards will persist.

Stefan Buzas

SURVIVAL THROUGH FORM

ART, FORM, AND CIVILIZATION. *By Ernest Mundt. University of California Press (Cambridge University Press).* 28*s*.

This book was written for very good reasons. The author, disturbed by the extreme specialization of the modern world, particularly the rift between artists and scientists, felt the need of a new force to unify the community. The impoverishment of spiritual values made him look for new standards to replace old ones no longer fitting the bill. Unfortunately his solution is one which has been tried before: Art must take the place of Religion. It's Matthew Arnold's belief that poetry must be 'a criticism of life' all over again. 'Without poetry, our science will appear incomplete; and most of what now passes with us for religion and philosophy will be replaced by poetry.' Arnold's solution didn't work because he made the value of a poem depend on what the poem *says* rather than on its quality as poetry. Although Mr. Mundt's remedy is based on a very different argument, it fails for the same reason.

Contemporary man, he claims, will be saved by 'participating' in works of art; by responding emotionally and rationally to the rhythms and symbols of art he will achieve the unity which at present he lacks. In Mr. Mundt's own jargon, '. . . the compartmentalization of knowledge and consciousness must be overcome by some unitary idea emphasizing the essential oneness of all life. Art has helped to effect such unification in the past; it is my belief that it has already begun to so function for the present.' His method throughout is to illustrate his discussion with examples of fine and applied art showing how they express the spirit of the period in which they were produced. Each period in the past has its characteristic form, whereas twentieth century art merely shows signs of disintegration. Instead of making this clear with photographs and detailed critical comment, Mr. Mundt gives us his own drawings of the examples he has chosen. This is done on the pretext that the formal qualities of buildings, pictures and the rest can be more clearly represented by this method. Personally, I found these diagrams meaningless, and to be told, for instance, that one of them 'reveals the relative weakness of pattern characteristic of the Renaissance' is absurd.

Moreover this crude method of separating the 'form' of a work of art from its other elements and the lack of any real appreciation in this book show up the weakness of the author's approach. Art, it seems, is not something to be enjoyed on its own account, but a means to a greater end. Consequently the intrinsic qualities of a work of art lose their value: when pieces of sculpture 'are approached only for the purpose of yielding æsthetic pleasure, the profundity of their artistic meaning will remain undiscovered.' This is a topsy-turvy approach to art.

John Curtis

THE NORTHWEST ARCHITECTURE OF PIETRO BELLUSCHI. *Edited by Jo Stubblebine. An Architectural Record Book. F. W. Dodge Corporation.* $6.50.

It may surprise many that there should be a market for a book such as this, dealing solely with the buildings of one architect in one, rather remote, region—the Pacific Northwest. It is accounted for by the vastness of the Pacific Northwest, its isolation, its lightning development in the last two decades and by the character of the architect himself. Belluschi went to America as an exchange student in 1923. Most of his countrymen left Italy under the pressure of poverty; they mostly came from backward southern Italy. They often stayed on the Eastern Seaboard, longing nostalgically for home. Belluschi deliberately chose freedom from the claustrophobia of his bourgeois past. He further chose to go to the West Coast, the most pioneering region in the USA. Within a very short time he was head of one of the largest and most successful firms in the North-West. The picture this conjures up of the complete, blustering, extroverted, successful American business architect would be very false. The real Belluschi is to be found, partly in his speeches, mainly in his buildings—the sensitive timber and brick churches, the charming informal houses with their affinities to the better known Bay Region work of Maybeck and Wurster. Yet the building for which Belluschi is best known is the one most likely to be associated with the large successful American firm—the slick smooth glass and marble Equitable Building. There is a curious tension about Belluschi's buildings—a sort of split personality. Here is the Roman designing in a setting of pine forests, fjords and snow-capped mountains. The acquired affection for rough timbers and glacial stones is tempered with an inherited passion for precision, for the sharp edge of the marble slab. This dualism is, one feels, never quite resolved.

In 1951, at the age of 50, Pietro Belluschi gave up his large and remunerative practice to take up a new career—the exacting deanship of an Eastern School of Architecture (the oldest in America)—MIT. Fifty is a good age for the head of a school of architecture, with years of successful practice behind him; it is a hard age for a sensitive shy man to start a new career, especially in a fresh country, and Massachusetts is as much a new country to Oregon as Oregon is to Italy.

Felix Atkinson

ARCHITECTS' WORKING DETAILS, *Volume I. Edited by D. A. C. A. Boyne. The Architectural Press.* 1953. 21*s*.

This is the first volume of a new series in which will be published the best selection of those Working Details which appear regularly in *The Architects' Journal*. The subjects covered in this first volume are: windows, doors, staircases, walls and partitions, roofs and ceilings, furniture and fittings, balconies, covered ways and canopies, and heating. It is a pity that a few more details are not included under the last two headings, but, perhaps in later volumes, these particular subjects will be amplified. The photographs, the draughtsmanship, and the production generally of the book are excellent, and the information given by the drawings are of the utmost value.

On each left-hand page there is a photograph of a building detail, and, on the facing right-hand page, the working drawing of that detail. Thus, like the pattern books of the eighteenth century, the architect is presented with solutions to many everyday design problems. And to-day how much greater than in the eighteenth century is the need for pattern books. Alas there are not enough; the architect is fully justified in complaining that the sort of information working details can provide is too scarce. As a result, as the introduction to this book points out, there is more duplication of effort in architecture than in any other profession. 'Doctors do not begin an operation without knowing how the same operation has been performed before. . . . Lawyers do not begin a case without looking up the existing precedents: in fact the professional (not to mention the scientific) tradition has been built up on the exchange of information between members of the same profession.' When the series, of which this is only the first volume, begins to come off the conveyor belt it will be possible to feel that a genuine effort is being made by one organization at least to provide a service for architects that has been missing since the Practical Exemplar curled its last volute.

N.R.C.

Books Received

WORLD'S CONTEMPORARY ARCHITECTURE U.S.A. (I). Ed. Yui ino and Professor Shinje Koike. The Shokokusha Publishing Co. $5.00.

DIFFICOLTA POLITICHE DELL ARCHITECTURA IN ITALY 1920-1940. Girilia Veronesi. Libreria Editrice Politnecuica Tamburini, Milano.

LE FONCTIONNALISME DANS L'ARCHITECTURE CONTEMPORAIRE. Ch. A. Shelloc. Vincent, Freal et Cie.

ARCHITECTURAL LETTERING. Arthur G. Burke. American Technical Society, Chicago, and The Technical Press Ltd. 48*s*.

SCHOOLS IN THE NETHERLANDS. Bouwcentrum, Rotterdam.

BRITANNICA BOOK OF THE YEAR, 1953. Encyclopaedia Britannica Ltd.

MODERN PRACTICAL MASONRY. E. G. Warland. Pitman. 50*s*.

PRESTRESSED CONCRETE. Y. Guiyon. Contractors Record and Municipal Engineering. £3 10*s*.

MATERIALS HANDLING IN INDUSTRY. British Electrical Development Association. 8*s*. 6*d*.

PRACTICAL HOUSES FOR CONTEMPORARY LIVING. Jean and Don Graf. F. W. Dodge Corporation. $6.95.

THE THREE LAMPS OF MODERN ARCHITECTURE. Joseph Hudnut. University of Michigan Press. 16*s*.

KNIGHT'S ANNOTATED MODEL BYELAWS. Chas. Knight & Co. Ltd. £2.

COLOUR AND LIGHT AT WORK. R. F. Wilson. Seven Oaks Press. 25*s*.

AN APPROACH TO PLANNING. T. H. B. Burrough. Pitman. 21*s*.

THE WORLD'S GREAT BRIDGES. H. Shirley Smith. Phoenix. 15*s*.

ARCHITECTURE THROUGH THE AGES. Talbot Hamlin. Putnam. $10.00

BUILDING SCIENCE: STRUCTURES. A. G. Geeson. English Universities Press Ltd. 27*s*. 6*d*.

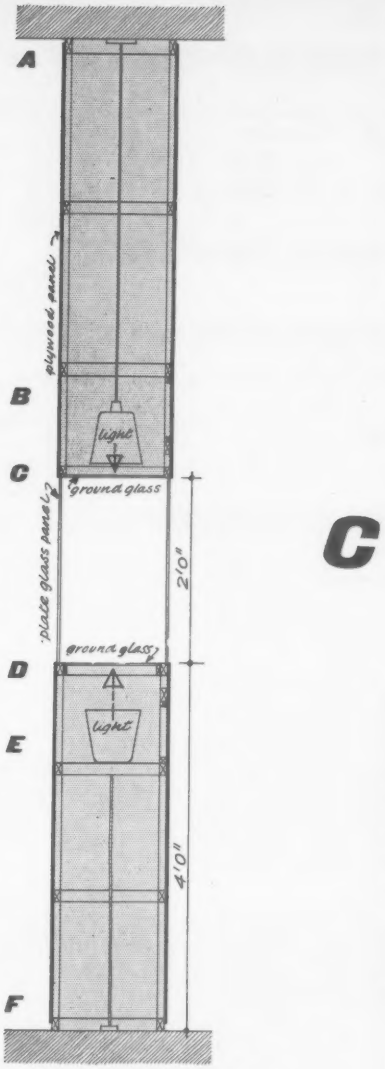
THE ART OF THE SEVERAN AGE IN THE LIGHT OF TRIPOLITANIAN DISCOVERIES. J. B. Ward-Perkins. Geoffrey Cumberlege. 7*s*. 6*d*.

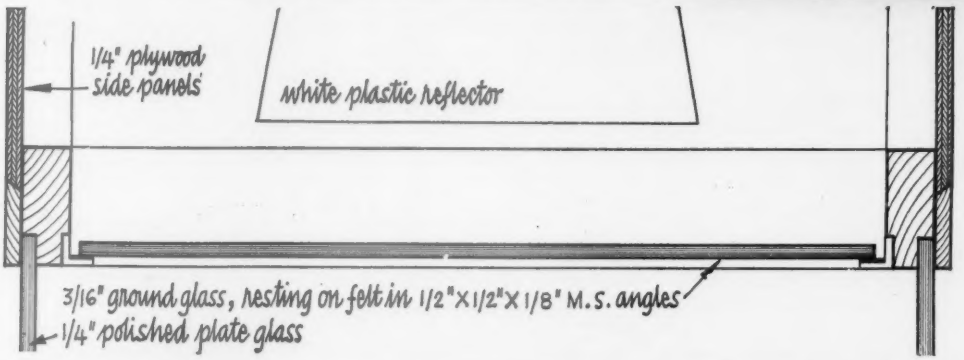
22 DANSKE EENFAMILIEHUSE. Bronner Og Korch.

THE EXPANDING ENVIRONMENT. E. A. Gutkind. Freedom Press. 8*s*. 6*d*.

SKILL

A MONTHLY REVIEW
OF BUILDING TECHNIQUES & INDUSTRIAL DESIGN





Above, section through the display column on the ground floor, with an enlargement of one of the plywood-glass joins, above right. 1, the column showing glass displayed.

1 INTERIORS

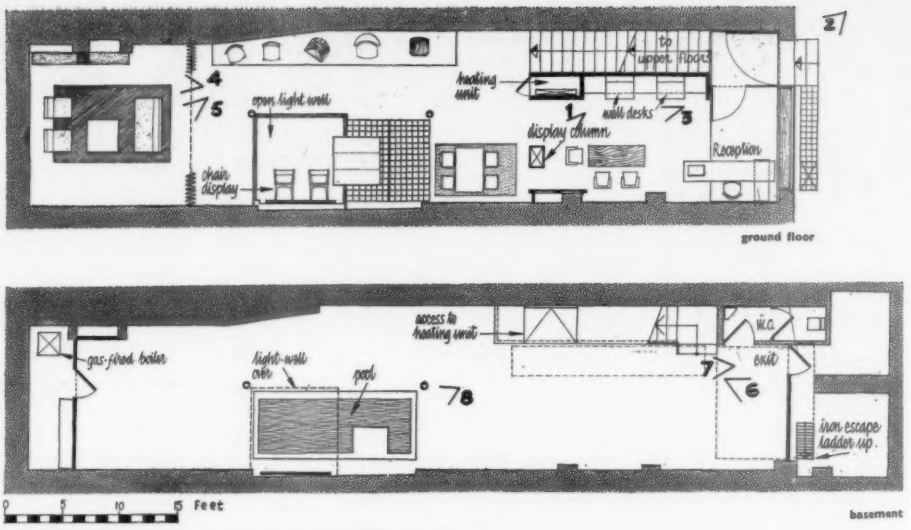
FURNITURE SHOWROOMS:

Architects: James Cubitt and Partners, Assistants-in-charge, Brenda Walker and Peter Gray.

26, Kingly Street, was formerly a small cloth warehouse in a narrow street east of and parallel to Regent Street, London. Apart from the necessity for economy, the basement and ground floor with their derrick and well, cast-iron columns and balustrades had a certain nineteenth-century industrial charm which was felt worth keeping as far as possible. The main structure was extremely sound, but also very solid, and made it difficult to do any chasing, hiding of pipes or major alterations. The intention of the client, Messrs. Finmar, was to use the premises as a wholesale showroom and therefore deliberately discourage attracting passers-by and casual customers. At the

same time it was desired to display their goods as attractively as possible. One of the main difficulties was the number and variety of objects of different shapes and sizes to be displayed coherently.

It was decided to make an unobtrusive, almost neutral background and create certain strong visual centres such as the lighted display column, the pond and rough slate chair slab, and the bright red end wall to the ground floor, and to avoid covering the whole interior with falsework. The ground floor and basement, being the larger areas, are used mainly for the more expensive and important furniture display. In order to gain access to this area a deliberate barrier was created by the reception counter and salesmen's 'standing' desks. A vertical chair display wall continuing from ground floor through the well to the basement overcomes some of the space difficulties. At the base of this, an internally lit fish-pond can be seen from above. This links the two main floors visually; they otherwise only have access by a narrow staircase. One of Finmar's main trading lines is the Le Klint



the numbers on the plans show the viewpoints from which illustrations 1-8 were taken

2, looking into the ground floor showroom from Kingly Street; the glazed screen was required to conform with fire regulations. 3, the ground floor showroom, looking past the display column to the ladder of chairs. 4, a corner of the showroom beyond the ladder of chairs.

2

3

4

FURNITURE SHOWROOMS

5, at the end of the ground floor showroom; the right-hand wall is painted bright red. 6, a corner of the basement, showing some of the plumbing which has been left exposed. 7, looking along the basement showroom, with the Le Klint shades grouped like Chinese lanterns on the right. 8, the pool, granite slab and ladder of chairs.

5

6

7

8

9

9, the staircase, looking down, with the walls painted in different shades of blue. **10,** *a detail of the china display on the first floor landing.* **11** *and* **12,** *two views of the all-black china and glass display room on the first floor.*

10

11

12

shades which are grouped together like Chinese lanterns. The floor surfaces to these areas are of black thermoplastic tiles, again providing a neutral background; one cast-iron column on each floor has been painted lemon yellow.

The existing exterior window was barely altered, and what had formerly been an open lobby and loading bay was retained. It can be closed at night by a large flush door which during the day folds back to form part of the side wall.

The upper floors are used to show other ranges of furniture and as office space. The staircase to the upper floors has one of the most subtle effects in the showrooms; the walls are painted in shades of blue which become lighter on the first floor landing, from which there is a choice of white stairwell above, pale blue passage ahead leading to a small white-painted display room at the back of the building, or, on turning round, a cavernous room without windows painted entirely black. This is used to display china and glass, which is either spotlighted or displayed against luminescent surfaces: the result is like a normal china shop reversed black-to-white. The upper floors are used for smaller furniture displays and as offices, and have restrained black and white decoration.

[continued on page 339

At the end of the last century, Luxfer specialised in the manufacture of all constructions through which daylight is admitted into a building, and in the middle of this century Luxfer still do.

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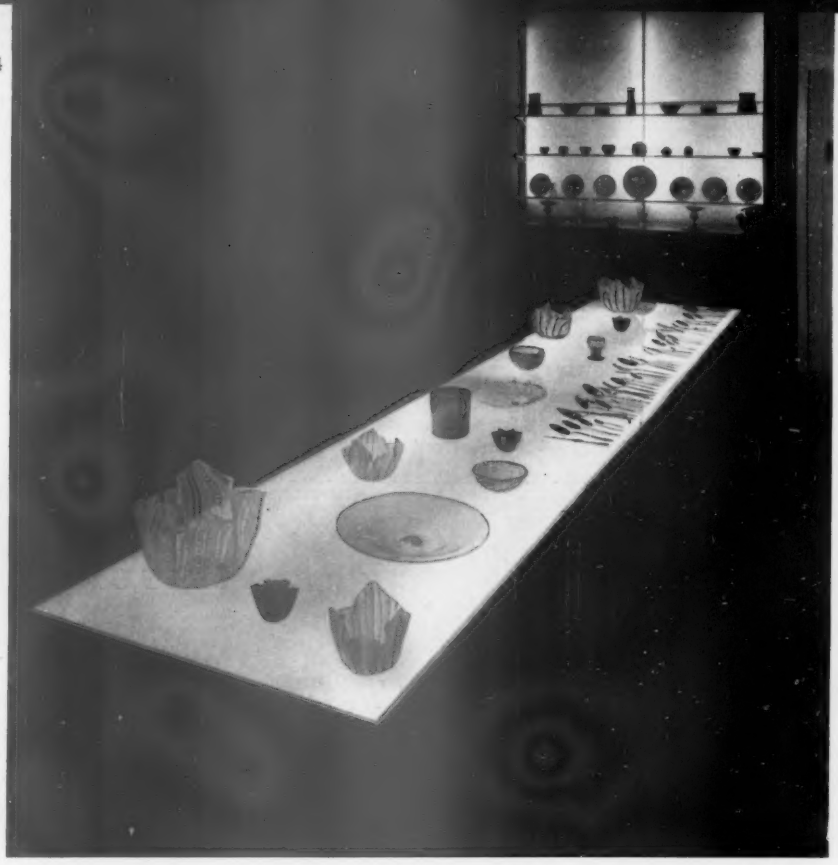
FURNITURE SHOWROOMS

13, *the director's office on the second floor.* 14, *a close-up of the table in the china and glass showroom; the definition of the objects is typical of the extreme clarity given by this method of display.*

13



2 DESIGN REVIEW

adaptable wall light

A low-priced wall light that can be fixed after decorations are completed is a felt need. In this model designed by E. Cooke-Yarborough and Ronald Homes for Cone Fittings Ltd., adjustability is the basis of the design, and it does not depend upon some delicate mechanism that may give trouble later.

A small fixing block is secured to the wall by two pins, and holds the flex in place. The 9 inch high reflector is mounted on a three-armed bracket by screws, and the leg unit, which is de-mounted for packing, is sprung into position over the heads of the screws and held by them against the shoulder of the shade. The position can then be altered by moving the legs.

The shade is available in terra cotta, citron, peacock blue BS 103, dark blue grey BS 633, light grey, and cherry red.

The legs are plastic covered in white or yellow, or copper anodised aluminium. The reflector gives a satisfactory cut-off with lamps up to 75 watt; the price is 49s. 6d. including tax. **Diana Rowntree**

laminated church pews

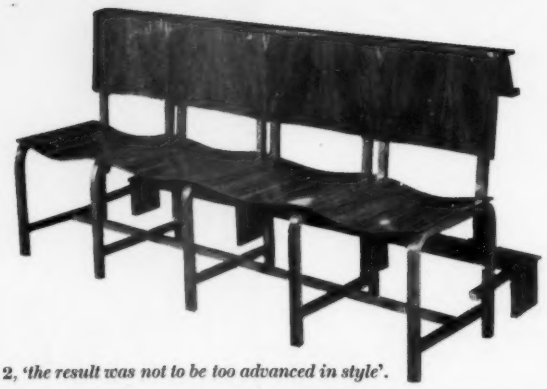
'*Some of the advantages of laminated construction for church seating are ease of handling and strength combined with lightness.*' In these words the manufacturers (E. Kahn & Co.) state admirably the truth of the matter, and we may assume that left to themselves they would have let the laminated pew demonstrate it too.

Unfortunately they received contradictory briefing from their clients. They were asked to design a pew structure (for a church in Yorkshire), in laminated veneers to present a method of multiple seating combined with *modern appearance.* It was requested that the *result was not to be too advanced in style.*

Undaunted by these remarkable requirements they proceeded to design the pew unit. First they produced plywood units of delightfully rhythmic character to form the seats and backs. The logical next step would seem to be a leg unit of bentwood. One gathers from the evidence of the finished product that they did proceed to do this, and came up against the obstacle inherent in their task. Continuous plywood seating mounted on a simple bentwood

1, *church pew in laminated wood.*

framework could hardly fail to be advanced in style. The compromise was arrived at by bending the parts of the supports in direct contact with the plywood, but treating the lower parts of these members as though they were in solid wood construction. The actual saving in weight is corrected from a visual point of view, by the apparent solidity of the book-rests and kneelers, and the square jointing of the stays. The final result does perfectly fulfil the schizophrenic role. **D.R.**



2, *'the result was not to be too advanced in style'.*

3 TECHNIQUES

RADIATORS

by John Voelcker

Though it now has rivals, hot water remains the most economic medium for most space heating purposes. Unfortunately, like so many branches of technology which date back to the last century, development has been to some extent inhibited by early usage with the result that much of the manufactured equipment still tends to reproduce forms which have been proved technically unfavourable.

The object of this review—which is concerned with radiating surfaces and not with the generation of heat—is to call to mind the salient facts which research has brought to light on the subject and to consider how these should influence the architect's choice of equipment.

At the heart of all considerations of heating is the fact that the efficiency of a human body depends on maintaining the temperature of the blood at a figure round 99°F. Blood temperature is maintained by balancing the quantity of heat generated by the body against the quantity of heat carried away in the surrounding atmosphere. But the calculation is further complicated by the fact that the human body, on whatever activity it is engaged, must lose heat to the atmosphere in a certain definite manner: about 50 per cent must be lost by radiation, 30 per cent by convection and the remaining 20 per cent by the evaporation of heat-laden moisture from the lungs and the surface of the skin. Any serious variation in these proportions will cause discomfort as surely as will a variation in the blood temperature itself.

In practice the most common failure in this latter respect arises from the inability of the body to part with its allotted 30 per cent by convection due to the relatively high temperature of the surrounding air: and the general preference for radiated over convected heat arises from the fact that radiated heat does not, of itself, increase the air temperature. This preference, however, does not amount to a desire to eliminate convected heat, for in this country it is hardly possible to get a sufficiently high room temperature in cold weather without some measure of convection. For if radiant heat exceeds the due proportion, the body cannot part with the right amount of heat in this form.

The other objection to heating principally by convection lies in the fact that convected air can easily become a draught. If the air in a room is consistently warmer than the enclosing surfaces, air movement will be considerable. Sharp 'temperature gradients' will be set up, and downdraughts will be particularly noticeable in the neighbourhood of wall and windows.

In heating, therefore, there are three factors to be watched: the first is that there should be enough heat, the second is that this heat should be rightly divided between convection and radiation, and the third, which is linked with the second, is that the heat sources should be so placed as to prevent undue movement of air in the room, air movement in a room being caused chiefly by sharp temperature differences.

It was this third factor which was the subject of an experiment quoted by Vernon where two radiators were fixed in identical rooms. The first of these, a twelve-section flat panel type 23 inches high, was placed under a window, and the second, a nine-section two-column type 38 inches high, was placed to one side of the window.

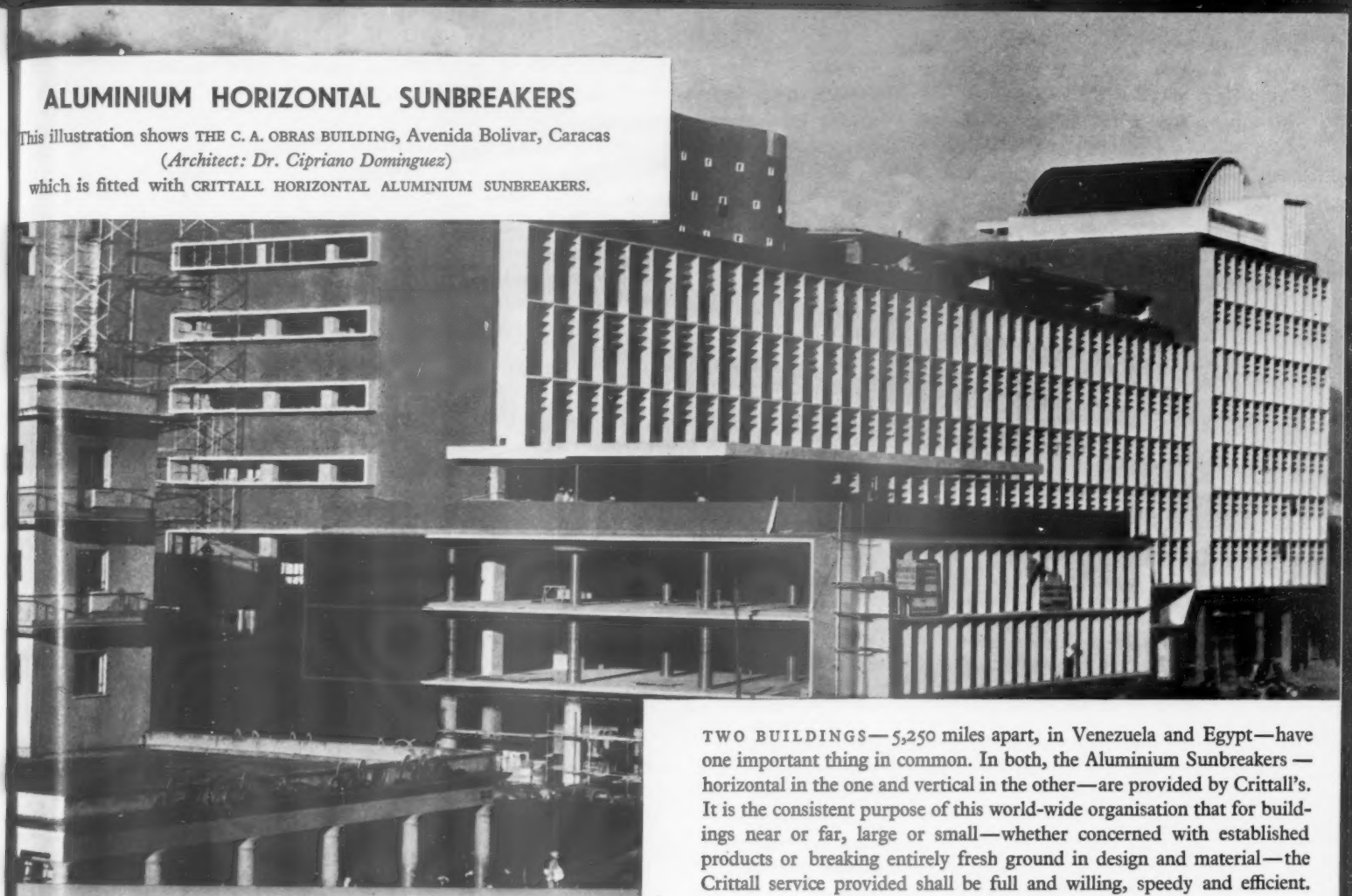
	Air temperature at height above floor of				Temperature Gradient
	3″	30″	5′	9′ 9″	
Column radiator at side of window ...	64.5	69.1	75.8	83.2	18.7
Wall radiator under window ...	65.5	66.8	67.4	67.7	2.2

The results of this experiment, which are given in the table, show that the flat panel radiator, placed where it was, was in fact giving a better service than the column radiator, even though (as it happens) its surface area was 42 per cent less. The heat at floor level—which is always so important for the feet—was no less, while the temperature gradient as between floor and ceiling was only 2.2°F. as against 18.7°F. In other words the higher temperature readings given by

[continued on page 341

ALUMINIUM HORIZONTAL SUNBREAKERS

This illustration shows THE C. A. OBRAS BUILDING, Avenida Bolivar, Caracas
(*Architect: Dr. Cipriano Dominguez*)
which is fitted with CRITTALL HORIZONTAL ALUMINIUM SUNBREAKERS.



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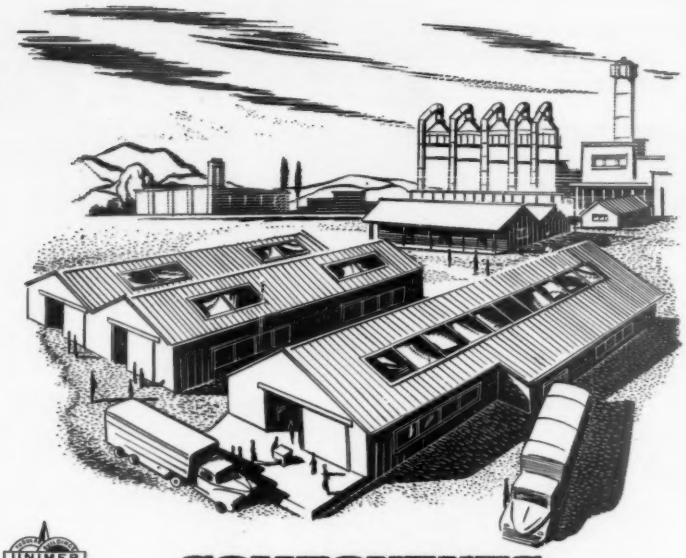

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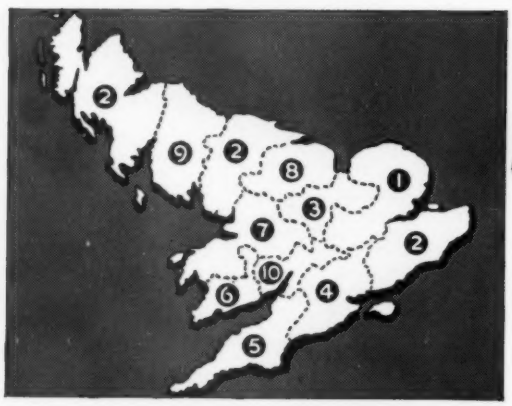

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the column radiator occurred where the heat would be of little value to the occupants, while the striking difference between floor and ceiling temperature must be conducive to down draughts.

It was a pity that this experiment was not repeated using identical radiators in different positions and different radiators in the same position, but the evidence helps to confirm that sources which heat the lower parts of a room are of greater value than those which heat a room indiscriminately. The operative phrase is, however, 'which heat the lower parts,' for the nature of radiant heat is such that it is not necessary in all cases for the heat source itself to be placed low down. Since radiant heat energy travels in straight lines, the lines of greatest intensity being those perpendicular to the radiating surface, it can be beamed. Panels therefore can be placed high up, but facing downwards so that they warm the floor. This attribute is particularly valuable in badly insulated buildings where it is possible to give the occupants the value of the heat source directly, before it can be dissipated to outdoors.

HEATING SURFACES

The surprisingly small number of variant radiator and panel forms can be accounted for by the fact that their purposes, the particular ways in which they transmit heat, can be clearly defined and their theoretical heating effects calculated with precision. Heating surfaces are, in fact, 'normalized' assemblies, and certain of their dimensions, their working pressures, and the means of connection are standardized; the components, whether columns, pipes, plates or pressed sheets, are jointed together to make up heating assemblies giving the required quantity and quality of heat. The information provided by the manufacturers is, as a rule, well tabulated and reliable because it is the result of thorough testing by approved methods.

Granted that the architect's choice is to a large extent determined for him by the space available, there remains the important question of the configuration of the actual heating surface. The fundamental research on this particular subject was completed as long ago as 1917, the authors, Arthur Barker and M. Kinoshita, publishing their Report entitled 'The effect of the shape and surroundings of a hot surface on the radiation from it' in 1923. One of the salient conclusions of their research was to show that intricate profiles, though they may increase the surface area, do not make for greater efficiency. This seems one of those fortunate cases where the interests of hygiene and æsthetics are at one with those of technical performance. Nevertheless these findings have been slow to gain complete acceptance. It is true that we have seen the successive launching of the hospital radiator, the wall panel radiator, the radiant panel and the invisible panel: but what is so surprising is that neither users nor the trade have shown any alacrity in hurrying the older, uglier and more ineffective types off the stage: with the natural result that the good heating surfaces are still too expensive.

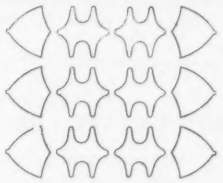
This is true, though this is another aspect of the matter which goes a long way to account for the present state of affairs. The tall column type radiators which were shown by Vernon to be relatively unfavourable, do in fact show a large surface area and thence give a high thermal transmittance relative to the amount of floor space they take up, even though as we shall have occasion to note later, this increase in transmission is not proportional to the increase in surface area. Thus it often happens that in old buildings and, alas in new buildings where heating has not been considered, they offer the only opportunity of getting *enough* heat for the floor space available. Thus it is that our substantial heritage of ill-considered structures ensures their continued market.

But, before passing to examples, there are still two technical points to be discussed: the shape of heating surfaces and their finishes.

1. *The configuration of heating surfaces*

Manufacturers' data usually give the surface area of each radiator or panel contained in their catalogues. This information is only of limited value; it can be used to make initial estimates of the approximate number of radiators or panels required but no more. Data of heat transmission, essential values in any heating calculation, are usually inadequate or too approximate to be of use for accurate theoretical calculations. The following example, quoted from Barker and Kinoshita*, illustrates clearly the danger of assuming that heat transmission is necessarily strictly proportional to heating surface area. Two cast-iron radiators of different cross section were selected from the catalogue of a well-known radiator manufacturer. The first radiator was a 'Narrow' type, 25 sections long and 36 inches high, with a surface area of 57.5 square feet, the second a four-column type 9 sections long and 32 inches high, with a surface area of 58.5 square feet. It was found by calculation, and subsequently checked by test, that in identical

Section through 'Narrow' type radiator.



Section through four column type radiator. Both drawings approximately ⅛th actual size.

conditions the narrow type transmitted 9,000 BTUs, whereas the four-column type transmitted only 8,000 BTUs, despite its greater surface area. In each case a part of the heat transmitted was in the form of radiant heat, 13 per cent of the total in the case of the narrow type and only 9 per cent in the case of the four-column type. The implications of these results are important in the design and assembly of heating surfaces; it was noted earlier that radiant heat is emitted in straight lines in all directions, and further that the greatest intensity of emission is perpendicular to the heating surface. Furthermore, the figures quoted above indicate that a reduction in radiant heat emission will be reflected by a reduction in the total heat transmitted. The configuration of the 'Narrow' type radiator was such that a considerable quantity of the radiant heat emitted could escape from the radiator to surfaces beyond; in the case of the four-column type, on the other hand, a considerable percentage of the radiant heat was trapped among the columns, a great deal of mutual radiation took place, and the heat never escaped from the radiator.

Another example illustrates equally clearly that surface area does not provide a reliable guide to transmission. The surface area of a column radiator increases proportionately with any increase in the height of the radiator, but the actual heat transmission will not increase in the same way since a smaller percentage of the total area will be freely exposed. The decrease in transmission efficiency is apparent in the

* University College of London, Dept. of Heating and Ventilating Engineering, Bulletin No. 1, 1923.

following data quoted from a manufacturer's catalogue for a four-column radiator:

18 in. high	24 in. high	30 in. high	36 in. high
108 BTUs	107 BTUs	106 BTUs	104 BTUs

It will be appreciated from these illustrations that the forms of heating surfaces have considerable effects on their transmissions. A complicated surface having many re-entrant angles will transmit a smaller quantity of heat than a flat surface of equal surface area, and a complicated surface will emit proportionately less heat by radiation than simple or flat surfaces. A decision on the particular configuration of heat surfaces to be used will depend on the amount of suitably placed wall or ceiling space available.

2. *The finishes of heating surfaces*

Like the configuration, the finish of a heating surface can have a considerable effect on its power to emit radiant heat and consequently on the total heat transmitted. Polished metal surfaces and metallic paint finishes should be avoided since they increase the reflectivity of surfaces and reduce emissivity by as much as 45 per cent. Cellulose paint, distemper, or enamel are suitable finishes, their colour and surface quality having no appreciably adverse effect on transmission; in fact, it has been demonstrated that certain colours, for example rough stone distemper or mandarin-red cellulose paint, actually increase the transmission to a small extent. When the surfaces of flat panels are papered a correction should be made for a 3 per cent loss in efficiency, and in cases where pipes are buried in the surfaces of walls and ceilings, or in the floor construction, the conductivity of the covering materials should be taken into account in calculations.

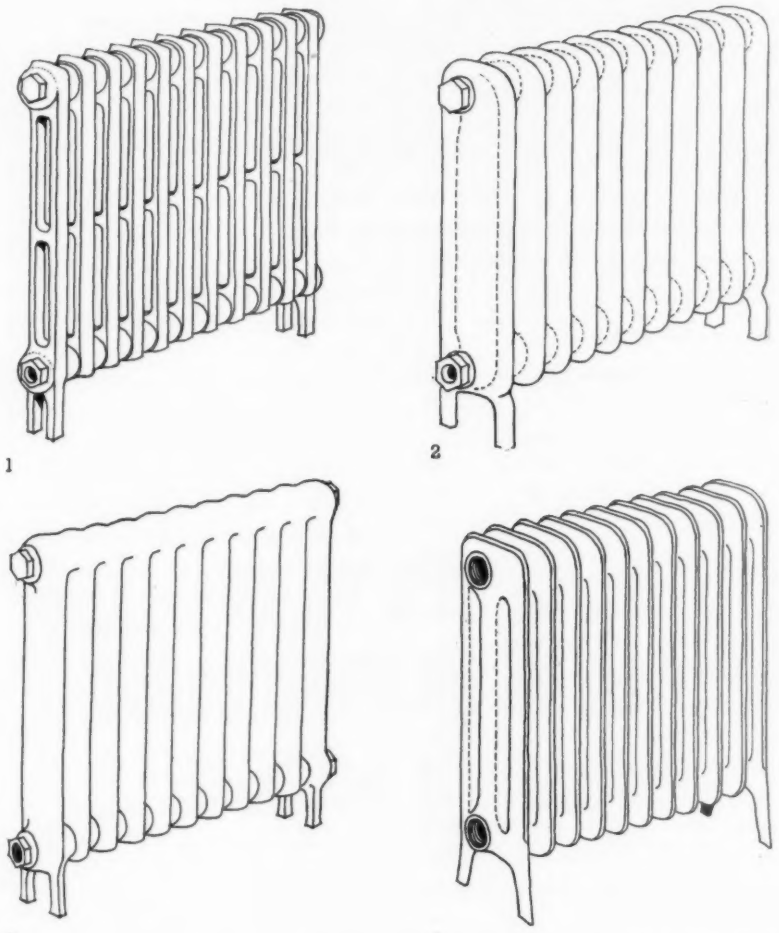
RADIATING EQUIPMENT

Radiating equipment falls into four main types: The *column type radiator* (which includes the Hospital radiator), the *wall panel radiator* which is like the column type in that it is freestanding but is narrower in section, *the radiant panel* which includes the skirting panel and which forms a continuous surface with the surrounding structure and lastly the *invisible panel* which is sunk beneath the surface of the surrounding structure.

Column radiators are manufactured in a variety of shapes and sizes; they range from a single column to eight columns in width, and their heights from 13½ inches to 36 inches, the most common heights being 18 inches, 24 inches, 30 inches and 36 inches. The configuration of their surfaces depends upon what is required of them; from the point of view of heat transmission, the smaller the column cross section the better, for then the heating medium comes into contact with the maximum area of heating surface. At the same time a large number of small angular columns are laborious to clean, and harbour dust and germs which become noxious when heated. The hospital type radiator, with its smooth-surfaced, widely-spaced and large columns easily accessible for cleaning, is an example of a particular bias in the balance of requirements: cleanliness is achieved at the expense of transmitting power.

It can be seen from the data given that the Beeston 3½-inch radiator combines good heat transmission with cleaning facilities, and although it is slightly wider than the two-column type it takes up less wall surface for the same transmission power.

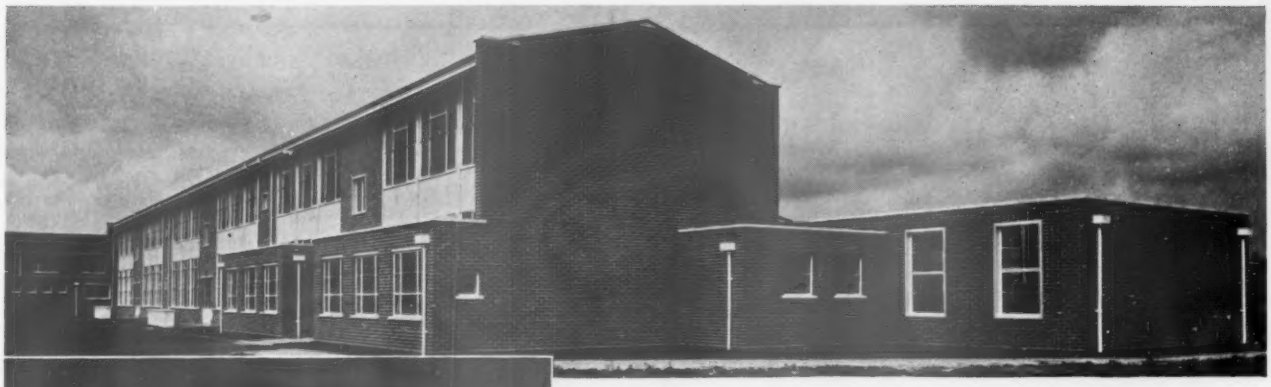
Column radiators made from pressed steel sheets, electrically welded together, appear to be cheaper than cast-iron types in the first instance, and where rapid responses to temperature changes are required the thinness of the metal, and therefore its rapid conduction of heat, is an advantage.



1 2 3 4

1, a Crane two-column Radiator. This particular unit which is 24 in. high and is built up of eleven sections has a heating surface of 11 sq. ft. 2 and 3, Beeston Hospital Easy Clean Radiators. Both are 24 in. high and eleven sections long, that shown in Fig. 2 being 5 in. wide and that in Fig. 3 3½ in. wide. The 3½ in. model has a heating area of 1¼ sq. ft. per section and for a temperature difference of 70° F. gives a transmission rate of 145 B.T.U. per hour per section. The 5 in. model on the other hand has a heating area of 1¾ sq. ft. per section and for the same temperature difference gives a transmission rate of 173.25 B.T.U. per hour per section. Thus though the latter has a larger heating area per section the transmission rate per square ft. is less (99 as against 116 B.T.U.) and therefore the total transmission is not proportional to the increased surface area. 4, Stelrad three-column Radiator (Steel Radiators Ltd.). This model which is 5 in. wide and 24 in. high has a heating surface of 1.55 sq. ft. per section.

[continued on page 343



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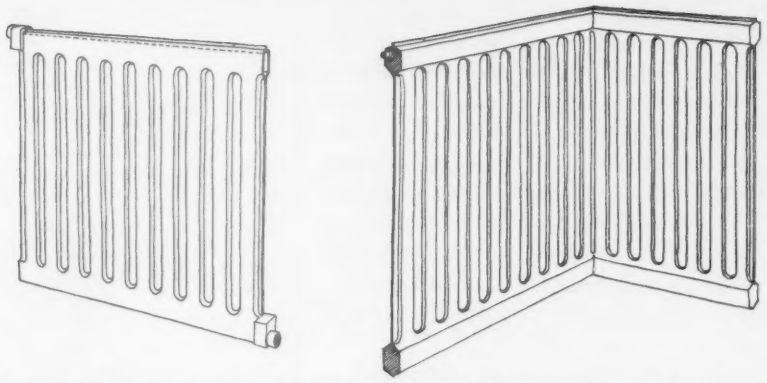
2. wall panel radiators

Like the column type, these are made of cast-iron or pressed steel sheet. They are a simplified flattened form of column radiator, and usually the spaces between the waterways are filled in, adding to the transmitting surface on account of the heat conducted across them.

Panel radiators are particularly suitable in spaces glazed for their whole length, since they would provide evenly distributed low-level heat. They are equally suited for use in corridors where the amount of heat required is small, and their narrowness has space-saving advantages.

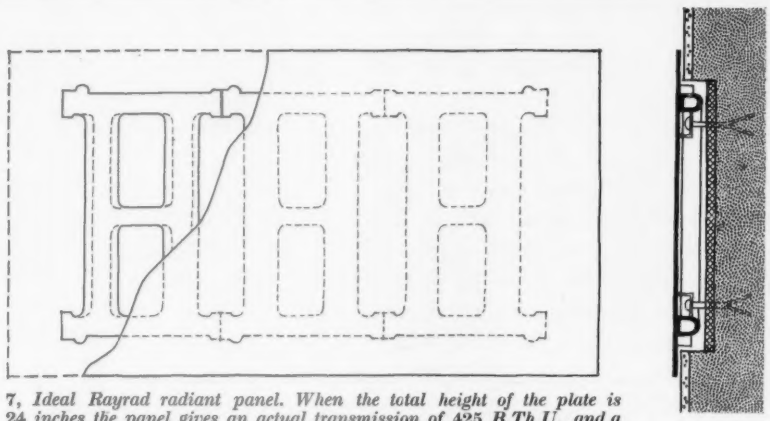


5, Gulf wall panel radiator, single pattern, 24 inches high. Heating surface 0.92 sq. ft. per section. Transmission factor 192 B.Th.U. per square foot per 100°F. temperature difference. 6, Stelrad wall panel radiator for corner fixing. (Steel Radiators Ltd.)

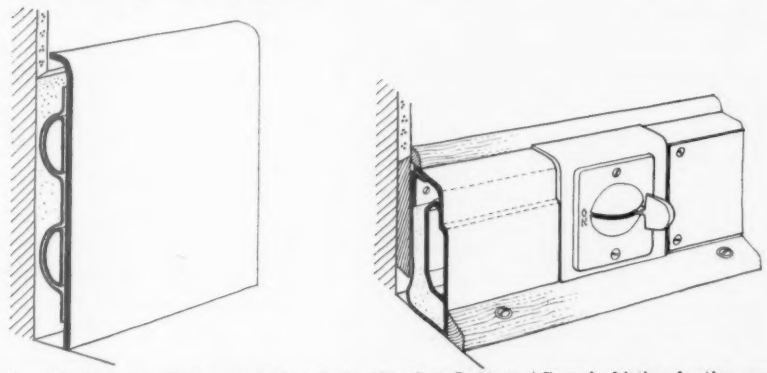
3. radiant panels

These are skeletons of cast or wrought iron water channels to which flat steel plates are fixed. The heat is transmitted from the face, and it will be appreciated that on account of their surface configuration these panels have a higher heat transmission per unit area than either column or wall types. The emission of radiant heat from these radiant panels can be as much as 70 per cent of the total transmission compared with the 10 per cent to 13 per cent for column types. The problem in using these panels as the only source of heat is that it is often hard to find sufficient surface area in the correct zones of a space in which to fix them. In the past attempts have been made to overcome this difficulty by increasing the surface temperature of the panels; in so doing the transmission is enhanced, both in quantity and efficiency, but unfortunately the intensity of heat transmitted is likely to cause acute discomfort to the occupants of the space who are too close to the heating surface. The question of the optimum surface temperatures for radiant panels is critical because it has been found that relatively small increases can cause astonishingly unpleasant results. It appears from observations made in this country that the surface temperature for panels fixed to walls and ceilings should not exceed 100°F., and for floor panels 77°F. because of the adverse effect of higher temperatures on furniture or carpets.

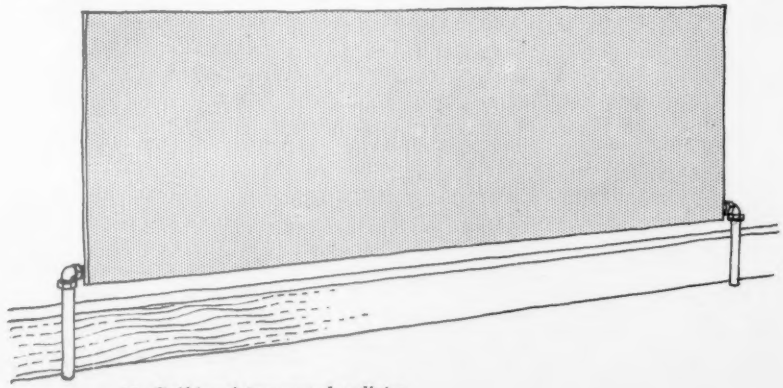
One last variety is skirting panel heating, which is used extensively in America where it is known as 'baseboard' heating. Recently a few baseboard installations have been made in this country. A full description of the layout and performance of one such scheme is given in the *Architects' Journal* of May 6, 1954.



7, Ideal Rayrad radiant panel. When the total height of the plate is 24 inches the panel gives an actual transmission of 425 B.Th.U., and a 'heating effect' transmission 565 B.Th.U. per section per 100°F. temperature difference, when fixed to a wall. 'The actual transmission' figure is for calculating boiler power and pipe sizes, and the heating effect figure for calculating room temperatures. The model shown has a surface area of 7.3 sq. ft. and a 'heating effect' transmission figure of 1,695 B.Th.U. when in the wall position. When in a ceiling the readings are considerably lower and when in the floor are slightly higher.



8, 'Solray' radiant panel (Comyn Ching & Co. (London) Ltd.). 9, 'Crane' skirting heating panel.



10, Gulf 'ray' type panel radiator.

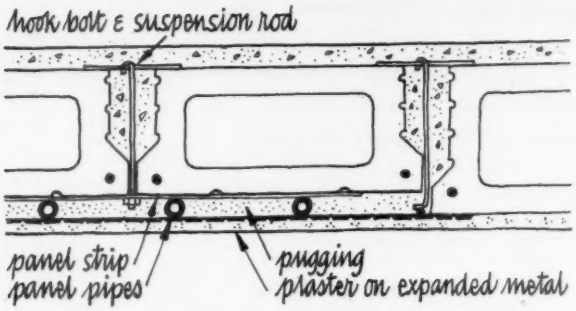
4. invisible panel heating

The invisible panel differs from the radiant panel only in that the radiating surface is fully assimilated to the finished surface of the room. The methods of fixing and insulation of the panel backs vary with different forms of building construction, but the waterways themselves are commonly heavy steel pipes of ½ inch or ¾ inch bore, looped to pitch at 4 inch to 6 inch centres, and assembled into panels of the required size.

The surface temperature of the pipes is calculated to produce wall or ceiling temperatures of about 100°F. below the panel, or a floor temperature of about 77°F.; this temperature as well as having no adverse effect on furnishings is considered to be comfortable to the feet of the occupants.

The advantages of panel systems of this kind are that, being concealed in the fabric of the building, they can be placed in any suitable location without causing obstruction, the pipe layout can be graded, and the panels can be zoned to provide heat of the right kind in the best positions with great precision; in consequence fuel savings can be as great as 20 per cent. It is thought that ceiling panels may tend to cause pattern staining, but this hazard is more usually the result of heating by methods in which a high proportion of the heat transmitted is by convection; with invisible ceiling panels the convected heat will probably be less than 35 per cent of the total transmission, and as the ceiling surfaces will be warmer than the air temperature, pattern staining is not likely to occur (see National Building Study Special Report No. 6).

The initial cost of invisible panel heating installations may be as much as 30 per cent greater than visible panels; in larger installations this cost is offset by fuel savings. Unfortunately, this is not the case in smaller installations, for instance in single dwellings. There would appear to be both a need and a demand for an easily assembled set of components, which, instead of requiring the services of a specialist heating contractor, could be installed by any general contractor.



11, invisible ceiling panel used in conjunction with a precast concrete beam floor.

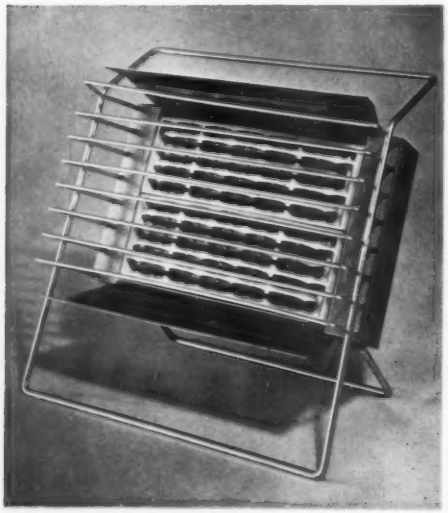
Suppliers:

Crane Ltd., 45-51 Leman Street, London, E.1. Beeston Boiler Co., Beeston, Nr. Nottingham. Steel Radiators Ltd., Steirad Works, Bridge Road, Southall, Middlesex. Gulf Radiators Ltd., Penarth Road, Cardiff. Comyn Ching & Co. (London), 15-21 Shelton Street, London, W.C.2. Ideal Boilers & Radiators Ltd., Ideal House, Great Marlborough Street, W.1.

4 THE INDUSTRY

TWO NEW PORTABLE FIRES—

The ardent functionalism of the 'thirties insisted that a portable electric fire, if it was to be really efficient, should have a curved reflector. Though at that time the best of us were determined that we could get to like anything that was technically 'right,' we now candidly admit that the curved reflector made of these fires ungracious obtrusive little objects. It is now recognized (with some relief) that, though the curved reflector is efficient, its relative efficiency over other forms is not such as to make it de rigueur and for this reason it is pleasant to take note here of two fires that depart from it.



1, the 'Sunhouse' Model 148.

The first of these is the 'Sunhouse' Model 148, a 2-kilowatt fire, which in the grouping of its multiple elements is more akin to the wall panel type. The finish is satin and brown hammered, and the price of the A.C./D.C. model is £3 6s. 8d., including purchase tax. (H. Frost & Co., Ltd., Walsall, Lancs.)

The second is the 'K-Fire,' a model made in both 1 and 2 kilowatt ratings, which belongs more evidently to the portable fire tradition.

A splayed polished aluminium reflector 1/10 inch thick contains the element (or elements in the case of the 2-kilowatt model) in the angle of the splay. An expanded metal wire guard (which is movable to allow for polishing) clips over the element and helps to build up the effect of solidity. The fire is adjustable and costs (including purchase tax) £5 12s. 6d. for the 1-kilowatt and £6 19s. 4d. for the 2-kilowatt model. (J. Scott Smith Ltd., 350 Abbey House, Victoria Street, London, S.W.1.)

It is comforting to notice that both these models conform to the two relevant BSS: 1670, Safety Requirements for Electric Fires, and 1945, Fireguards for Heating Appliances—the latter of which includes the exacting trouser scorching test which so many fires have failed to pass.

2, the 'K-Fire'.

[continued on page 346

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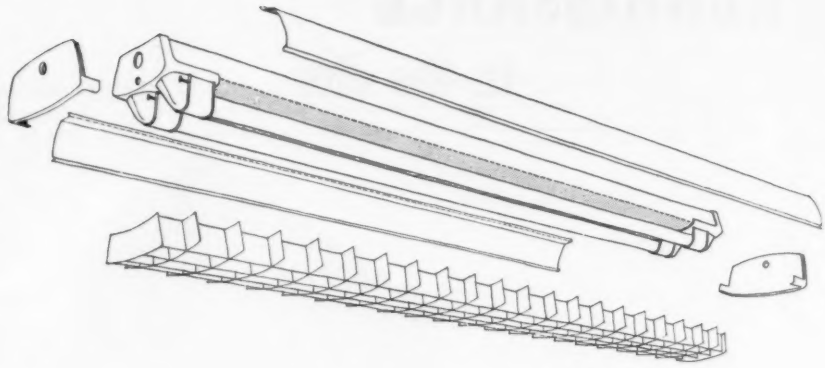
RANGE OF FLUORESCENT LIGHTING

If at first sight Messrs. Crompton Parkinson's 'New Range' industrial fluorescent light fittings do not appear to differ greatly from the ordinary run of fittings described in THE ARCHITECTURAL REVIEW of March, 1954, close inspection reveals that they are an unusually well thought-out group. The problem the manufacturers set out to solve was how to design a basic lamp for one and two 5-foot tubes which, by using a kit of standard accessories, could be adapted to serve all the uses to which industrial type tubes can be put: a lamp which could be supplied with translucent or opaque reflectors (which can be omitted on one side to convert the fitting into a wall light), with closed or open ends and with or without an egg crate louvre. This is a feat of standardization, hence of economy using the word in its widest sense: economy in making, but also economy in marketing —for stockists can maintain a range of 54 designs by only holding 10 different pieces.

More thought has been given to the question of fixing: built-in fixing arrangements enable the lamps to be supported at any two points throughout their length and to be mounted tight against the ceiling. Further, they can be fixed butting end to end. More important still perhaps is the fact that the spring loaded lamp holders at both ends of each lamp enable one man to fix and to remove the tubes with one hand.

Considerations such as these do not necessarily make for elegance: but they stand a better chance of producing good design than all the 'styling' which has so far been put into this class of product; and whether it is due to the skill of Peter Bell, the designer, or to the logic of economy these are perhaps the most convincing in appearance of the industrial fluorescent fittings now on the market.



Crompton 'New Range' Industrial Fluorescent Tubes. The illustration shows two 1 kilowatt tubes in position (the holder can be adjusted to take one only), two side reflectors (which can be in high gloss stove enamel finish, or vitreous enamel or opal 'perspex'), two closed ends (for which can be substituted open ends if desired) and an egg crate louvre. All of these adjuncts screw or clip into the parent lampholder with unusual neatness.

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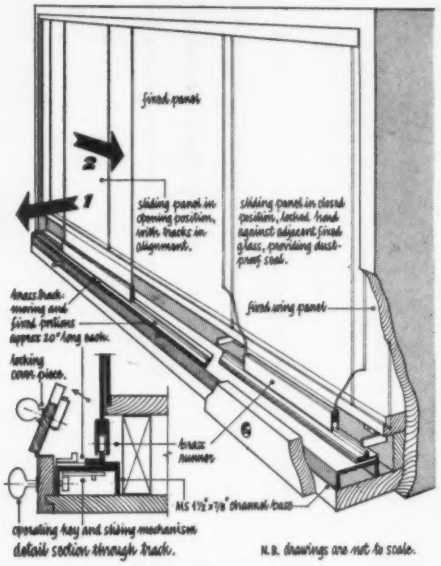
SLIDING GEAR FOR SHOW CASES

In the July issue we commented on the importing from Germany of the technique of glass to glass cementing by James Clark & Eaton Ltd. This same firm has likewise brought over from the same source a patented sliding gear for use with museum and shop showcases. The object of this gear



Mechanism of dustproof sliding gear.

is to overcome the age-old problem of how to provide cases with sliding glass panels which will also be dust-proof. Since the mechanism is confined to the base its use is particularly to the point in showcases which are all-glass. The basic idea of this mechanism is that certain sectors of the track move forward on a ratchet operated by a key, and in moving forward clamp the edges of the movable glazed panel against the edge surfaces of the adjoining fixed panels. When the rail is in the backwards position it is in alignment with the adjacent fixed section of the rail which enables the panel to slide across it. The advantage of this type of action is that the dust-tight joint is effected without the risk of scratching the surfaces of the glass.

CONTRACTORS etc

Flats at Hammersmith. *Architect:* Neville Conder. *General contractor:* Borough of Hammersmith Direct Labour Organization. Borough Engineer, J. E. Scrase; Borough Building Manager, E. North. *Sub-contractors: asphalt and roofing felt:* Faldo Asphalte Co. *Reinforced concrete:* Helical Bar Engineering Co. *Cast lead:* Stoner & Saunders Ltd. *Patent flooring:* The Marley Tile Co. *Waterproofing materials:* National Coal Board and Synthaprufe. *Grates:* Radiation Group Sales Ltd. *Gasfitting:* North Thames Gas Board. *Electric wiring:* Hartley Electromotives Ltd. *Electric light fixtures:* Walsall Conduits Ltd. and Oswald Hollman. *Plumbing:* General Contractors. *Sanitary fittings:* Standard Range & Foundry Co. *Door furniture:* James Gibbons Ltd. *Casements:* The Crittall Manufacturing Co. *Metalwork:* C. Harvey & Co. and Grundy Arnatt Ltd. *Joinery:* Jayanbee Joinery Ltd. *Tiling:* Langley London Ltd. and Copy & Co. *Shrubs and trees:* Hammersmith Borough Council Parks Dept. *Paints:* Mander Bros. *Cement glaze to staircase walls:* Robbs Cement and Enamel Finishes Ltd.

House at Storrington, Sussex. *Architect:* Richard Sheppard & Partners. *Associate architect:* Gordon Taylor. *General contractor:* W. Carver (Builders) Ltd. *Sub-contractors: bricks:* Messrs. Pratt, Watford. *Waterproofing materials:* Astos D.P.C. *Grates:* 'Redfyre.' *Boilers:* Watts Boilers. *Sanitary fittings:* Messrs. John Boldings. *Door and window furniture:* Messrs. Alfred G. Roberts.

Flats at Bishopsbridge Road, Paddington. Designed by Tecton. *Architects for the development and execution of the scheme:* Drake and Lasdun. *Assistant Architect:* Alex Redhouse. *Structural Engineers:* Ove Arup & Partners. *Heating, electrical and mechanical equipment engineers:* Donald Smith, Seymour & Rooley. *Quantity Surveyor: Cyril Sweett & Partners. General contractors:* Walter Lawrence & Son Ltd. and F. G. Minter Ltd. *Sub-contractors: piling:* Holst & Co. and The Franki Compressed Pile Co. *Steel fixing:* L. H. Gale, Esq. *Heating and hot-water services:* Matthew Hall & Co. *Plumbing and cold-water services:* Arthur Scull & Son. *Gas supply services:* North Thames Gas Board. *Electric supply services—site work:* London Electricity Board. *Electrical installation:* Troughton & Young Ltd. *Asphalt and roof felting work:* The General Asphalte Co. *Glazing:* Franklin Bros. Ltd. *Flooring:* Marley Tile Co. *Metal grilles and railings:* Allen & Greaves Ltd. *Bricks:* Dunbrik Ltd. *Windows:* Williams & Williams Ltd. *Door frames:* J. H. Sankey & Son. *Lifts:* J. & E. Hall Ltd. *Paint:* Leyland Paint & Varnish Co. and Duresco Products Ltd. *Precast concrete products:* Clarincrete Products Ltd.

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tibor textures

stevens furniture

banbury carpets

"Stratford"—deep textured upholstery and curtain fabric as shown at the Triennale Exhibition in Milan by Tibor Reich, in deep Midnight Purple. Woven by Tibor Ltd., Stratford-on-Avon. The "Arran" chair designed by R. E. Long is upholstered in three-tone Green "Argyle" check contrasted with "Stratford" texture. Manufactured by R. S. Stevens Ltd., Walthamstow, London. "Cheetah"—two-tone Black/Green Wilton Banbury carpet manufactured by I. and C. Steele and Co. of Bloxham, Banbury; design, Tibor Reich, F.S.I.A.

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Breeze partition blocks, refuse chute pipes and fittings and sanitary ware: Broads Manufacturing Co. *Precast stone and concrete facing slabs:* Wates Ltd. *Street lighting columns:* Concrete Utilities Ltd. *Bulkhead fittings:* G. E. C. *Ironmongery:* Lockerbie & Wilkinson Ltd. *Doors:* Gliksten & Co. *Joinery:* J. C. James Ltd. *Bituminous waterproofing:* Tretol Ltd. *Heating convectors:* Dunham Ltd. *Plaster:* Gyproc Products Ltd. *Steel rods:* Twisteel Reinforcement Ltd. *Road expansion joints:* Cawood & Co. *Additional contractors on contract 1: sub-contractors: piling:* Simplex Concrete Piles Ltd. *Glazing:* Aygee Ltd. *Lightning conductors:* R. C. Cutting & Co. *External tiling:* A. H. Herbert & Co. *Wireless relay:* British Relay Wireless Ltd. *Gardenwork:* William Wood. *Asphalt roadwork:* Highways Construction Ltd. *Lettering to blocks:* The Lettering Centre. *Plastering:* Pollock Bros. *Scaffolding:* Scaffolding (G.B.) Ltd. *Roof insulation:* Celcon Ltd. *Paint:* Keystone Paint & Varnish Co. Stic 'B' Paint Sales Ltd. and Cement Marketing Board, Ltd. *Bricks:* London & Sussex Merchants Ltd. *Steel bars:* Whitehead Iron & Steel Co.

School at Ford, Shropshire. *Architects:* C. H. Simmons, County Architect; G. Chamberlain, Assistant Architect. *Consulting engineers:* Ove Arup & Partners. *General contractors:* Shrewsbury Building Contractors Ltd. *Sub-contractors: damp-courses, roofing felt:* The Ruberoid Co. *Bricks:* Proctor & Lavender Ltd. *Special roofing:* C. D. Productions Ltd. (punt roofing). '*Ply-glass*' by James Clark & Eaton Ltd. *Thermoplastic floor tiles:* Flooring (North Staffs) Ltd. *Central heating:* Scull Bros. Ltd. *Boilers:* Ideal Boilers & Radiators Ltd. *Electric wiring:* Cooper & Co. (Shrewsbury). *Electric light fixtures:* Merchant Adventurers of London Ltd. and Falk, Stadelman & Co. *Sanitary fittings:* A. D. Foulkes Ltd. *Window furniture and door furniture:* James Gibbons Ltd. *Fireproof doors:* Leaderflush Ltd. *Textiles:* W. H. Smout & Son Ltd. *Wallpapers:* Wallpaper Manufacturers Ltd. *Plant pots:* Clement Dalley & Co. *School fittings, furniture:* Educational Supply Association Ltd. *Cloakroom fittings:* B. Finch & Co. *Interior decoration:* G. Green.

Crematorium at Cardiff. *Architect:* E. C. Roberts, M.Eng., M.I.C.E., City Surveyor. *General contractors:* (1) Messroom and Stores, N. gatekeepers' office, G. B. Coffin ; (2) Administration Buildings, S. gatekeepers' office, L. G. Mills & Sons; (3) Crematorium, A. N. Coles (Contractors) Ltd. *Sub-contractors: dampcourses:* Ruberoid Co.; Permanite Ltd. *Reinforced concrete:* Penarth Concrete Co. *Bricks:* Proctor & Lavender Ltd.; Cardiff Brick Co. *Stone:* The Bath & Portland Stone Firms Ltd. *Structural steel:* Blight & White Ltd. *Roofing felt:* Ruberoid Co. *Glass:* Welsh Glass Works Ltd. *Woodblock flooring:* Hallett Flooring Co. *Patent Flooring:* Neuchatel Asphalte Ltd. *Ancaster Stone (flooring):* Gregory Quarries Ltd. *Waterproofing materials:* R.I.W. Protective Products Co. *Central heating:* G. N. Haden & Son. *Grates:* Radiation Ltd. *Boilers:* Ideal Boilers & Radiators Ltd.; Beeston Boilers Ltd. *Electric wiring:* R. Hudson Ltd.; Page & Stibbs Ltd. *Electric light fixtures:* Troughton & Young (Lighting) Ltd. *Electric heating:* British Trane Ltd. *Sanitary fittings:* Adamsez Ltd., Shanks & Co. and Shires & Co. *Door furniture:* A. J. Binns Ltd. *Casements:* Standard Metal Window Co., Crittall Manufacturing Co. and Williams & Williams Ltd. *Plaster:* British Plaster Board Co. *Metalwork:* The Birmingham Guild Ltd. Joinery: Ellmore Ltd. and W. Clarke Ltd. *Marble (Swedish Green Marble Terrazzo):* Art Pavements & Decorations Ltd. *Textiles (Carpets):* Ernest Race Ltd. *Furniture:* Ernest Race Ltd., Hille of London Ltd., Finmar Ltd. and Heal & Son. *Clocks:* Gent & Co.

Shop at Canterbury. *Architects:* Robert Paine & Partners. Partner-in-charge: Michael Crux. *General contractors:* C. H. Denne & Sons. *Sub-contractors and suppliers: heating:* G. N. Haden & Sons. *Electrical installation:* Electron Engineering Ltd. *Lighting:* Philips Electrical Ltd. *Wall and floor tiling and mosaic work:* Summers & Co. *Plastic tiling:* Neuchatel Asphalte Ltd. *Windows:* Henry Hope & Son. *Refrigeration:* D. P. Toomey & Co. *Loose counters and display fittings:* Harris & Sheldon Ltd. *Travertine marble:* Anselm Odling & Sons Ltd. *Westmorland slate:* Setchell & Sons *Display lettering:* The Lettering Centre. *Sanitary fittings:* Alfred Olby & Son. *Hardware:* W. N. Froy & Sons and Nicholls & Clarke Ltd. *Precast floor slabs:* Concrete Ltd. *Emblem:* Morris Singer Ltd. *Steel frame for glazing:* Scaffolding (Great Britain) Ltd.

Finmar Showrooms, Kingly Street, W.1. *Architects:* James Cubitt & Partners. *Contractors:* 1st stage: F. W. Cliffords. 2nd stage: Heals Building Dept. *Sub-contractors: pavement lights:* Haywards (Builders) Ltd. *Haircord, felt:* Heals Contracts Dept. *Flooring ground floor and basement:* Edward Stuart & Co. *Central heating:* Weatherfoil Heating Systems. *Door furniture:* (2) Alfred Roberts (Wehag). *Boilers:* Ideal Boilers & Radiators. *Telephones:* Telephone Rentals Ltd. *Electric light fixtures:* Crompton Parkinson Ltd. *Ventilation:* Vent-Axia Ltd. *Venetian blinds:* Venetian Vogue. *Shop fittings:* Church & Co. *Slate:* Setchell & Sons.

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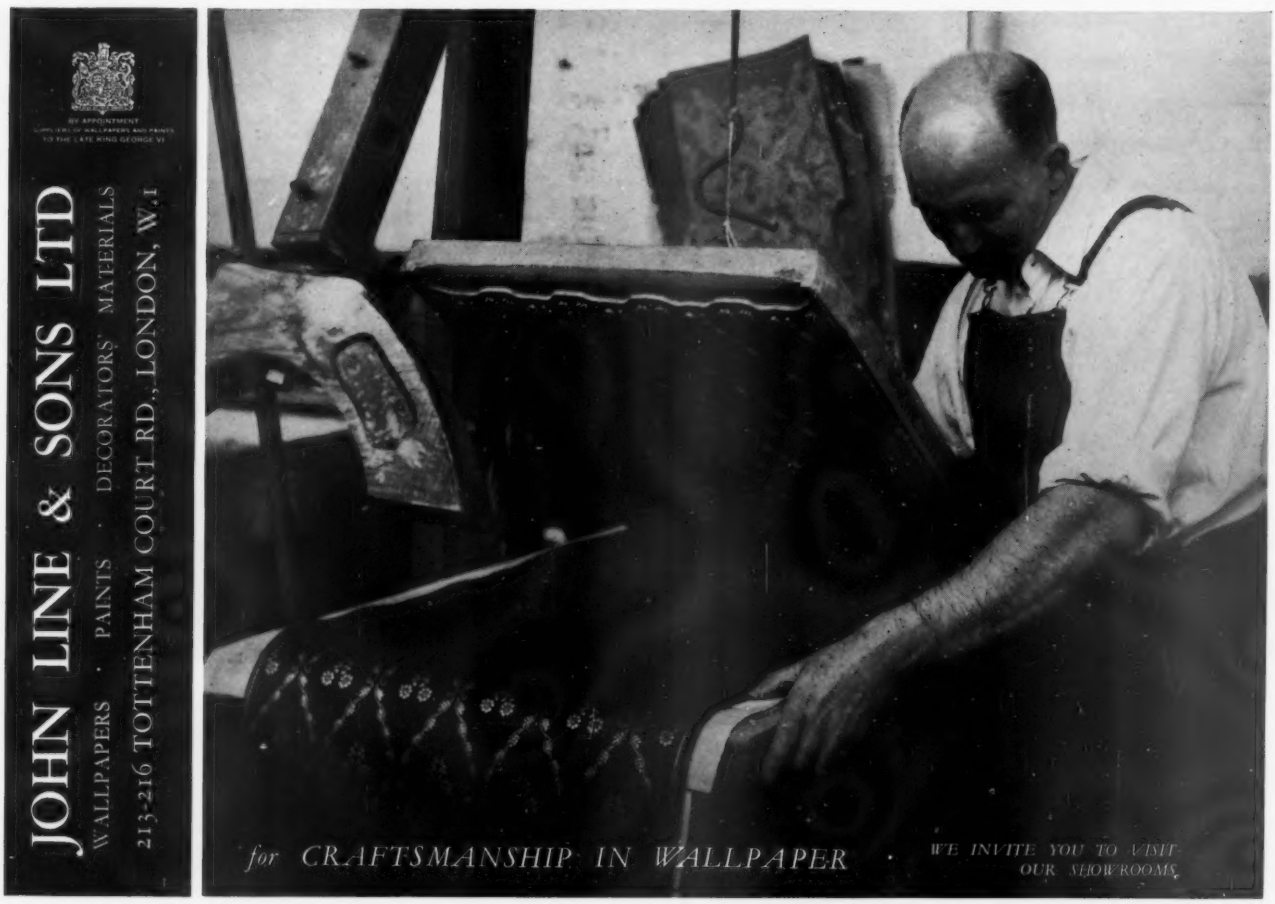

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